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AN

EXAMINATION OF A REVIEW,

CONTAINED IN THE

BRITISH AND FOREIGN MEDICAL REVIEW,

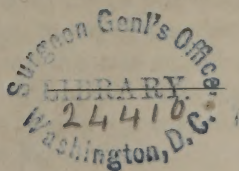
OF THE

MEDICAL AND PHYSIOL. COMMENTARIES,

BY THE AUTHOR,

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EXAMINATION OF A REVIEW, &c.

IN the April Number, 1841, of the *British and Foreign Medical Review*, a writer bestows a long notice upon the MEDICAL AND PHYSIOLOGICAL COMMENTARIES, which calls for a reply from their author. He will take up, and nearly in their order, the principal points of objection, and it will then be seen what are the most vulnerable parts of the work, in the opinion of the distinguished Journal, and how far the "Commentaries" are correctly represented.

It should be premised that the reviewer is opposed, *toto cælo*, to the cardinal doctrines of the vitalists; and it may appear that some private considerations have also lent their influence.

The review opens with the declaration that "a great book is a great evil," in the case before us. But, was not the length of the Essays necessary to the facts and the illustrations they embrace, and were not the facts and illustrations necessary to questions so long and ably controverted? Are they not the very means which have discouraged the reviewer from all attempt to show that the doctrines may be successfully impugned? Horace, who advocated brevity, allows that on all difficult questions, the most trifling circumstances should not be neglected when they tend to multiply the points of view; and the author had in his way a host of obstacles which it was necessary to surmount. To remind the reader that all may not as readily "grasp" the merits of great and controverted questions as himself, especially where the author was almost "single handed," (Vol. I. p. 391,) the precaution was taken of quoting from Zimmermann the following incontrovertible truth, namely:

"As it is impossible to arrive at the knowledge of a whole, before we are acquainted with its parts, it will easily be conceived of how much consequence it will be not to neglect the least cir-

cumstance, even that which seems the most known. This known circumstance is, as it were, the *chain* that unites together the truths we are in search of. It draws us nearer to the unknown, and enables us to see nature more nearly.'” The Commentaries then remark, that “this is our apology for any seeming prolixity, either here or elsewhere.” (*Comm.* vol. i. pp. 492, 531, 391, 267; vol. ii. p. 300.)

It is clearly absurd to suppose that subjects of such magnitude as are examined in the “Commentaries,” where the arguments of so many profound writers were to be met, and where so many facts must be arrayed in opposition, could have been despatched with that brevity which might be most convenient for a Review that professes to survey the whole field of foreign and domestic medical literature. The author had been too much admonished by the fate of others, and was too respectful of others, to neglect the available means of sustaining his position; and the very course which has been taken by the reviewer is ample proof that the author acted wisely.

To illustrate the advantages of brevity, the reviewer institutes a comparison between Dr. Holland’s “Medical Notes and Reflections,” and the “Medical and Physiological Commentaries.” Of the former, it is said that “the sketches are drawn by the hand of a master, though mere *outlines*,” and, in farther opposition, they are said to “convey a greater number of clear ideas to a reader of *ordinary* capacity than the most highly-wrought of Dr. Paine’s finished compositions.” “The latter contains a mass of materials, indeed, of great learning,” &c. Now, in the first place, as already said, the author was writing not alone for “readers of *ordinary* capacity,” but for all sorts of capacities, and in view of a torrent of opposition which he well knew must be encountered.

The reviewer has thus forced upon his author the necessity of involving Dr. Holland in this controversy; and if the reader will turn to the “Commentaries,” Vol. I. pp. 396, 543, he will find what coincidence of opinions with Dr. Holland suggested the commendation bestowed upon his work at the expense of the “Commentaries.” The author of the latter will also subjoin in a note some of the leading doctrinal views of the gentleman with whom he is contrasted, that it may be readily seen what are the reviewer’s opinions of “just and vivid conceptions,” “power and learning,” “clear ideas,” “lucid views,” and other criteria by which he would have the “Commentaries” tried. It is worth remarking, also, that, in respect to *design*, there is not the *most remote* parallel between Dr. Holland’s work and the “Commentaries.” The former professes nothing but to arrange what was already known or suppos-

ed to be known, without attempting to show the truth of what was controverted. (1)

But suppose an author were to expunge according to the taste, or the learning, or the prejudice, of his several readers, how much of his work would probably remain in the end?

Besides the *nine* principal Essays, the "Commentaries" embrace *fifteen* distinct, and elaborate Appendixes, each upon specific questions, and of difficult investigation. How generous, and how respectful of facts, is the following statement, the author submits to the reader, namely:—

"Of the degree of elaboration our readers may judge, when we say that Dr. Holland's single volume of six hundred pages contains *thirty-four* essays, whilst in Dr. Paine's bulky tomes we find but *nine*." (*Review*, p. 383.)

But, what if it were so? Would it prove any thing more than a similar comparison with a medical dictionary?

The reviewer's next objection is thus expressed:—

"To show that a certain *law* is not capable of explaining *all* the phenomena of a given action appears to be regarded by Dr. Paine as quite sufficiently proving that the *law* had no bearing on the action." (*Review*, p. 383.)

There is nothing in the "Commentaries" that can possibly suggest so great a perversion of the author's opinions. The statement is entirely predicated of the reviewer's physical doctrines of life, and of the author's opposition to them. The latter fully concedes that he does not admit the participation of physical laws in any "given action" of organic beings,—unless they be of such a nature as concern the *motion* of the blood, abstractedly considered. The power which generates the motion is the *vital* power. But, the illustration of the reviewer which immediately follows the foregoing quotation, is neither to the point, nor does it appear to bear out those "relations of ideas" in which the reviewer is pleased to consider the "Commentaries" sometimes deficient,—espe-

(1) Dr. Holland is so eminently a humoralist, that he believes that "the blood may take on morbid conditions directly transmissible to offspring." "The accumulation of this matter of the disease," (gout), he says, "may be presumed to be in the blood," and he thinks that *colchicum* can only act in three ways; either by "destroying the matter of gout by some specific change;" or, by "withdrawing it from the part affected into the general circulation;" or, by "procuring its removal from the system, through some of the excretory organs." "Collectively, they seem to include *all the modes* in which the medicine can act." Not a word of its possible action upon the diseased solids.

There is also a long disquisition upon "the Hypothesis of Insect Life as a Cause of Disease." A brief extract will serve the writer's purpose in respect to the reviewer. Thus, in adopting the opinion of the insect origin of the malignant cholera, among the reasons assigned, we read that, "in the hypothesis of production by certain animal species, *minute beyond the reach of all sense*, we have an explanation of the fresh creation and diffusion of the material cause," and especially as "out of the direct *dominion of the microscope* these animals are removed." Again, the "hypothesis" supposes these imaginary insects "capable of exciting vibrations in the air, of which man's grosser hearing is wholly unconscious; but which, received by their *fine organs* as audible sounds, minister to purposes of enjoyment and activity among beings *unperceived* by any of the human senses." It is also stated by Dr. H. that "Reamur and other naturalists have conjectured" that the clouds are sometimes made up of these insects. — *Dr. H.'s Med. Notes and Reflections*, pp. 15, 116, 122, 125, 126, 127, 135, 374, 524, 585, 562, 574, 576, 577. 1839.

cially when they do not acknowledge the intimate relation between the laws of organic and inorganic beings. Thus, the Journal in its *very next* sentence:—

“Now, any one who has given the slightest attention to the science of life,—Biology,—must be aware how little any phenomena exhibited by living beings can be attributed to the UNDISTURBED operation of any single *law*; and how constantly the physiologist and pathologist are obliged to make allowance for *circumstances* which interfere with the operation of the simplest and best understood principles.” (*Review*, p. 383.)

This is all very true, and constantly kept before the reader in the “Commentaries.” (See quotation from Commentaries forward.) But,—what, pray, have the contingent “*circumstances*,” which constantly “affect the operation of the simplest and best understood principles” in physiology and pathology, to do with the “law” as expressed in the first quotation? The last is designed as an exemplification of the first; but, where is the parallel between the “law” and the contingent “circumstances,” “the undisturbed operation”—where “the relation of ideas”?

The reviewer being mainly *personal* on the subject of the microscope, the author will say but little in the way of defence. There is one remark, however, in connection with this subject, which serves to illustrate the reviewer. It is this:—“Dr. Paine forgets that, faithfully employed, it [the microscope] *can only disclose facts*.” This the author denies, and has brought a mass of evidence which the reviewer does not attempt to impugn, unless by general “assertion.” “But facts,” he says, “are stubborn things.” This is as readily granted,—but what does it prove? Has the reviewer attempted to show that the author has not proved the worthlessness of the supposed “facts?” It is true, there is a quibble about the author’s satirical representation of the mode of estimating the weight of one of the supposed fossil animalcula, which is represented by Ehrenbergh as being “the 187,000,000th, part of a grain;” but what connection has this with the author’s great object of showing the inapplicability of the microscope to physiological investigations? And, as to the general contradiction, the reviewer shall have the advantage of it in his own language. Thus:—

“He quotes a number of instances in which microscopic observers have differed,” “but he does not tell us *how completely*, with instruments much improved during the last few years, and with increased knowledge of the circumstances which can affect the accuracy of the observation, *all good microscopists are now agreed on these*, as upon a multitude of other interesting and important questions.” (*Rev.* p. 384.)

It is very true the author has done no such thing, and for the reason that he has shown *exactly the reverse* of what is represented by the reviewer, and of the most able microscopists of the

present day. But this is a small circumstance compared with other perversions.

Finally, the author has quoted, in his "Appendix on the Microscope," as greatly distrusting and generally *condemning* that instrument, *John Hunter, Dr. Bostock, Dr. Hastings, Bichat, Dr. Granger, the Medico-Chirurgical Review, the Edinburgh Medical and Surgical Journal, the Dublin Medical Press*; and, among others, the BRITISH AND FOREIGN MEDICAL REVIEW, 1837, which says,—

"Every one, who has examined doubtful objects by a *high* magnifying power, must be aware how much is often left to the *imagination* of the observers; and it is not difficult to account for the GREAT DISCREPANCY which exists in the statements of animal as well as vegetable anatomists.'" (*Comm.* vol. i, p. 711.)

The reader will ultimately feel interested with knowing that something is said about *Dr. Carpenter* in this place, which is as follows:—

"The Dublin Medical Press, 1839, in speaking of *Dr. Carpenter's General and Comparative Physiology*, remarks that,—'there is a chapter on the elementary structure of vegetables, and another on that of animals, in which, according to the *established usage*, the *improbabilities*, and *fictions* of the microscopic observers are recorded.' 'The student must not place confidence in these *wonders* of the microscope.' 'But, this is *entre nous*; for, if it were known that we entertained such heretical notions, in these palmy days of the reign of microscopes, we might risk encountering some grievous *bodily harm*.'" (*Comm.* vol. i, p. 711.)

Having disposed of the microscope, the reviewer begins a *pretended* defence of *Dr. Carpenter*; but, as this is subsequently resumed at great length, the author will delay its consideration, and take up the long and critical disquisition, which follows next, as to the proper import of the word "FORCE." This being the reviewer's great POINT, it requires at the hand of the author a profound consideration. The reviewer contends that the author is wrong in assuming a meaning for the word which is not recognized "*by philosophical writers in any department of science*;" and yet, as the author will now show, the reviewer employs it in the very sense which he condemns. But, let us first have the *manner* in which the reviewer gets at his premises. Thus:—

"Returning to our inquiry," says *Dr. Paine*, (vol. i, p. 12,) "'what is life?' and to the consideration of its definition by *Bichat*, and the philosophers of his school,—we consider the *functions* as being merely the result of peculiar forces operating upon organic matter, and that life virtually consists in the *co-existence of these forces and that peculiar substratum*. The forces are, to a CERTAIN EXTENT, in a *passive* state, WHEN NOT EXCITED BY THEIR APPROPRIATE STIMULI. But, they are still the essence of life; and whilst they *endure*, whether in an active or SEEMINGLY passive condition, life is constituted." [The reader will ultimately see how

all this is misrepresented by the reviewer.] Now here, Dr. Paine evidently recognizes the existence of a 'force' as something distinct from matter, on which it acts. In the previous paragraph he speaks of 'force' and 'property' as synonymous, [words referred to are "forces, or *properties*, if you prefer;"] and we are thus enabled to understand the idea which he attaches to the following definition, contained in a subsequent part of his essay.—'The foregoing considerations' he says, (p. 18,) 'would lead us to regard life as a cause, and to define it as consisting of certain specific properties appertaining to organized matter, which are more or less capable of resisting the destructive agencies of inorganic matter, and the forces to which it is liable, and of protecting against them the matter in which they are INHERENT.' (Review, p. 385.)

Of this definition of life, it is then said, —

"We do not know when it has been our fortune to meet with a more complete jumble of ideas, than that which *would be involved* in the foregoing sentences, if interpreted according to the usual meaning of the words composing them." (Review, p. 386.)

The author will now not only defend his definition as perfectly consistent and accurate in all its parts, but will place his reviewer in the dilemma provided for the author. But, the *cunning* which characterizes the review must be first exposed. By a specious fraud the reviewer endeavours to make his author confound the forces of *life* with the *mechanical* forces, when an *absolute contradistinction* is observed between the former and all the forces of physics, throughout the "Commentaries." It will be ultimately seen that the author employs each denomination of force according to the acceptation of the best philosophers in the several departments of science. It should be kept in mind, also, that the reviewer's criticism *bears* mainly upon the author's definition of life, in which both the *vital* and *chemical* forces are spoken of. But the reviewer, to make out, as successfully as he might, the imputed confusion, diverts the attention of the reader from the author's reference to the *vital* and *chemical* forces, by starting off upon an *attempted* exposition of his own notions of *mechanical* force, and thus endeavours to impress the reader with the belief that the whole import of the definition, even of the *vital* "properties," violates the signification of *force* as employed "by philosophical writers on *any* department of science." As the author has said, this expedient is his reviewer's *greatest point*, since if he could persuade his readers of the imputed "jumble of ideas" in the author's *definition* of life, it might follow in the mind of the reader that the whole context was equally a "jumble."

A second great intention of the reviewer is to divert the reader from the author's argument, which relates entirely to the question whether life be constituted by "*the functions*" in their ordinary sense, or by the "*vital properties*," of which the "*functions*" are only a consequence. The reviewer substitutes "action of *some* kind" for "*vital functions*," and fixes his illustration upon *phys-*

ical force. As to the "action" of which the reviewer speaks, the author is in perfect accordance with the best physical and chemical philosophers, and goes beyond Dr. Carpenter and the reviewer himself in admitting the necessity of "*some kind of action*" whenever *vital* force may exist; as will be soon set forth. The author will now add, that the reviewer's criticism *turns* entirely upon insulating the expression as to the—"forces of life whether in an active or *seemingly passive* condition,"—the author thereby referring to those "functions" which are *appreciable*, and which, by the physiologists with whom the argument was conducted, are said to constitute life. (*See, also, the preceding sentence, p. 7.*)

The author will now proceed to show the stratagem, and, also, how the reviewer, whilst weaving the net, employs the term *force* in the very sense which he condemns.

1. "By philosophical writers," says the reviewer, "on any department of science, the term *force* is only applied *when an action of some kind is taking place*; thus, the *force* of gravity, that is, the *attraction* subsisting between the earth and the falling body *causes* the clock-weight to descend, or if checked, *occasions a pressure against* the impeding substance."⁽¹⁾ (*Review, p. 386.*)

Dr. Carpenter has the same illustration, but substitutes the word *power* for *force*, these being synonymous with him. Thus:—

"The *power* of gravitation is called into exercise when the clock-weight is wound up."⁽²⁾ (*CARP. Princip. p. 132.*)

Now the reviewer is here right in his *illustration*, and obviously supposes that the *force* of gravity is equally in "*action*" (or "*exercise*") whether the clock-weight be at rest or in motion; which is the true philosophy of gravitation. Such being his meaning as to "*action*," the author fully agrees with him so far, as it respects all kinds of physical force. But, what connection has this with the author's remark in relation to the *forces of life*, which he has shown to be *inactive* in the *seed* as it respects all but *vital affinity*, and allowed to be perfectly passive, in the absence of stimuli, even by the reviewer and Dr. Carpenter. The reviewer goes on thus:—

2. "The Creator, in giving origin to that which we term matter, by that very act *CREATED* the *FORCES* by which different material bodies *operate* upon one another."⁽¹⁾ (*Review, p. 386.*)

Now was there ever a more glaring contradiction, and "in the same breath"? Here we have positive *agents*, real "*entities*," something actually "*created*," *inherent* in matter and capable of "*operating*" on other matter,—since the reviewer will hardly maintain that when the Creator *creates* such "*forces*" as are here spoken of, he means that the Creator created *nothing*. These

(1) The author takes the liberty, in common with his reviewer, of marking certain words in *Italics*, &c.

(2) Carpenter's Principles of General and Comparative Physiology, p. 132—1839.

forces, then, may be either in an *active* or *passive* state. Now let us have the next following sentence. Thus:—

3. "For all *forces* result from the *action* or *operation* of the *properties*, (thus differing *essentially* from the *properties* themselves) *with which* matter is endowed." (*Review*, p. 386.)

This is more a curiosity than a matter for grave criticism. In one sentence, we have real substantial *forces* inherent in matter, ever ready to operate, and the handy work of the Creator, whilst in the very next, the prerogative is snatched from the Creator and given to the "*properties*" of matter, which, of course, are very logically said to "*differ essentially from*" the *forces* which they create.

The author cannot help thinking that his reviewer has been again borrowing from Dr. Carpenter in this instance; for Dr. Carpenter says:—

"In machines constructed to take advantage of the physical *properties* of matter, and to bring them into useful operation, a *stimulus* to their action is required, in some means which shall *develop* these *properties*, and thus *create* powers [or forces.] Thus, the *power* of gravitation is called into exercise, when the clock-weight is wound up." (1) (*CARP. Princip.* p. 132.)

Thus the winding up the clock is the "*stimulus*" which "*develops*" "*physical properties*," (already developed in matter by the Creator,) which *properties*, thus artificially *stimulated* and developed, then "*create* powers"! "*Vitalists*," even the "*transcendental*," have nothing comparable with this. But that it is really so will more fully appear from another paragraph from Dr. Carpenter, by which it will be farther manifest that the reviewer must have borrowed the whole of this explanation from Dr. Carpenter's work, since he agrees with Dr. Carpenter after the following verbal manner. Thus, Dr. Carpenter:—

"The term *LAW* of *NATURE*, as already employed, expresses the *conditions of action* of the *PROPERTIES* of matter. The Divine Creator of the Universe 'has, by creating his materials, *endued* with certain fixed qualities and *powers*, *impressed them in their origin* with the spirit not the letter of his law, and made all their subsequent combinations and relations *INEVITABLE consequences* of this *first impression*." (*CARP. Princip.* p. 134.)

And yet, in the same paragraph, Dr. Carpenter contradicts this fundamental proposition. Thus:—

"To suppose, as some have done, that the *properties first impressed* upon matter would of themselves continue its actions, [yet '*inevitable consequences*,'] is to deny all that revelation teaches us regarding our continued dependence on the Creator. Let it be borne in mind, then, that when a *law* of *Physics* or *Vitality* is mentioned, *nothing more is really implied* than a simple expression of the *mode* in which the *Creator is constantly operating* on inorganic matter, or on organized structures." (2) (*CARP. Princip.* p. 135. — See *Comm.* Vol. I, p. 25, for the perfect accuracy of the author's statement.)

Here, also, the reviewer contradicts himself in the same manner, when ridiculing in Dr. Paine the very doctrine which both him-

(1) And so the reviewer, thus:—"Does any *force* exist until the water has been converted into steam by the *stimulus* of heat, and the steam by a still further addition of temperature caused to expand with violence? Assuredly not." (*Review*, p. 386.)

(2) So thorough is Dr. Carpenter in this contradiction that he says in a note,—"If *miraculous interpositions* are exceptions to general laws, they are *so only* in human estimation." *Op. cit.* p. 135.)

self and Dr. Carpenter would have us *believe* and *disbelieve*. Thus:—

“Yet this is only carrying out Dr. Paine’s doctrine in the mode he himself warrants, when he tells us, (Vol. I. pp. 10, 25,) that the Deity is *not* the *immediate* cause of the phenomena of nature, but that he has brought into existence a number of *forces*, which are the *proximate* causes of all phenomena.” (*Review*, p. 386.)

Such is *exactly* Dr. Paine’s doctrine *throughout* the “Commentaries,”—nowhere *violated*, nor did he “mistake it,” as the reviewer supposes, “for a new hypothesis.”

The following, therefore, is the “relation of ideas,” both with the reviewer and Dr. Carpenter: 1. Before gravitation can be “called into exercise” upon “a clock-weight,” it must be “stimulated.” 2. “The Creator *created the forces by which* different material bodies *operate* upon one another.” 3. “All the subsequent combinations and relations of matter are the *inevitable consequence*” of the “*forces*” or “*powers*” so created by the Creator. 4. But, the actions and phenomena of organic and inorganic beings are not only *not* the “inevitable consequences,” or “proximate” results of the “*forces*” or “*powers*,” or even “properties” so created, but they flow *directly* from the “mode in which *the Creator* is *constantly* operating on inorganic matter, or on organized structures.” 5. The Creator did *not* create the *forces* which he *did* create, but “*all the forces*” are *created by* “*the properties* with which matter is *endowed*.” 6. But “the properties” *inherent* in matter have no existence till “*a stimulus*” is applied “which shall *develope these properties* and *thus create powers*” or “*forces*.”

Such is the philosophy of distinguished opponents of vitalism. The reader will observe that the summary corresponds exactly both with the reviewer’s and Dr. Carpenter’s statements, between which the coincidence is precise. The author has kept them distinct by appropriating to each writer a particular type. It was quite unnecessary, however, to have preserved this individuality, since it will appear that the reviewer agrees with Dr. Carpenter in all “his positions,” and, through many pages, so mixes himself up with Dr. Carpenter, that it is extremely difficult to separate Dr. Carpenter from the reviewer.

If we now revert to the quotations from the review, marked 2 and 3, by putting these two consecutive sentences together, the reader will perceive that the reviewer also convicts himself of identifying “*forces*” and “properties,” notwithstanding his simultaneous attempt to make one the “creators” of the other. The sentence number 2 is also a perfect recognition of the doctrine, which the reviewer violently condemns in this place as being ad-

vocated by Dr. Paine, "that the Deity is *not* the *immediate* cause of the phenomena of nature, but that he has brought into existence a number of *forces* which are the proximate causes of all phenomena." And, we have just seen by a quotation from Dr. Carpenter, that he also sustains this opinion of Dr. Paine, and yet declares it otherwise. The reader will farther observe that, in the sentence where an attempt is made to contradistinguish *forces* from *properties*, the reviewer renders *his* properties, (and, also, in the sentence about the clock-weight, his *force* or power of gravity,) *real agents, — acting, creating, &c.*

Again, take the following paragraph, in which the reviewer attempts a distinction between *properties* and *forces*, but, in doing so, recognises the existence of *force* as an *active power* like the *properties*, and, not only so, he again makes the *properties*, in opposition to himself, (sentence number 3,) the *creators* of the *forces*. Thus:—

"Having disposed of *forces*, we will turn for a short time to *properties*. And, we would ask what other notion of matter do we possess than that derived from those *properties* which either directly affect our senses, through the material changes they produce in our organs, or which, by the influence of different bodies on one another, give rise to *forces* that produce phenomena of which we in like manner take cognizance?" (Rev. p. 386.)

"A writer," as the reviewer says, "who can so contradict himself, scarcely needs to be exposed by us." (This passage will be soon repeated in its application to the author.) The author has said that the whole of the foregoing explanation of "*force*," on the part of the reviewer, must have been taken from Dr. Carpenter's work. And so it must, — for by no fortuitous reverie could two minds have brought about a coincidence so replete with internal proof of a common origin. The "interpretation" is *unique*, and cannot be imitated. And so we shall see of other instances.

Having now taken the question out of the confusion in which it has been involved by the reviewer, and got at its true merits, let us see, and for other substantial purposes, how far the author is sustained in his imputed use of the term "*force*" or "*forces*," as they are employed in *physical* and *chemical* science.

For the foregoing purpose the author will first take the united authority of Laplace, and Professor Graham of the London University, and will, also, subsequently confine himself to "philosophical writers" who are justly held in the highest esteem by the British Review. The author has selected the following out of many similar passages, as expressing exactly the import of the word *force* as carried out in the "Commentaries," in its *physical* sense, and as conveying precisely the meaning in which it is employed

in that part of his *definition of life* which relates to the *chemical* forces. Thus, Laplace and Professor Graham:—

“This supposition is conformable with the views of corpuscular philosophy entertained by Laplace. According to that profound philosopher, the *FORM of aggregation* which a body affects *depends* upon the mutual relation of *three forces*: 1. The *attraction* of each particle for the other particles which surround it, which induces them to approach as near as possible to each other. 2. The attraction of each particle for the heat which surrounds the other particles in its neighbourhood. 3. The repulsion between the heat which surrounds each particle, and that which surrounds the neighbouring particles, a force which tends to disunite the particles of bodies. When the first of these *forces PREVAILS, the body is solid.*” (1)

Now in the last of the foregoing propositions, or when “the body is solid,” that “kind of action is taking place,” which, by the reviewer’s illustration, happens in respect to the “*force of gravity*” when a body is at rest upon the earth, and by which he so *totally perverts* his author in substituting that “*kind of action*” as his author’s meaning in his argument as to the ordinary “vital functions.” The reviewer’s “*kind of action*,” however, the author maintains must exist even in the “seed,” as he will ultimately show, and as *fully* implied in the extract, page 7. But the author also maintains that it is a *consequence*, not a *cause* of life, as held by Dr. Carpenter and “other able writers on the same side.”

The doctrine, as stated in the foregoing quotation, is frequently expressed in the “Commentaries.” Thus, in distinguishing the vital from the physical forces, the author says,—

“Who shall say, that the fall of a stone, the motions of the planetary system, &c. more clearly evince their dependence upon the power that is called gravitation? The ocean rises and falls; but, this is only another coincident effect, and brings no variety to illustrate the force. The want of greater variety leaves the mind in doubt; and it is nothing but these simple effects, which imply a cause, that satisfies all that *some unknown force PREVAILS*. [The same word as used by Laplace.] But its *nature*, whether material or immaterial, an *emanation* or an *oscillation*, *heat* or *cold*, *light* or *darkness*, *no one can divine*. Still there is something,—a sort of spell, which *HOLDS all MATTER*, in one uniform way, under its *CONTROL*,—save only, in its proper sense, the living organized being. And here we see the *forces of life contradistinguished* from the *physical*, as they are from the *chemical*,—since the forces of life may partially overcome the force of gravitation. The man walks,—the bird flies. It will not, of course, be said, that

(1) Graham’s Elements of Chemistry, p. 65, 1837.

so also does the bow send forth the arrow, and the powder the ball, — for there is no analogy in the cases.” (*Comm.* vol. i, p. 44.)

“*The forces of life are inherent* in every part of living matter, and may *forever operate per se*, and resist all other [natural] forces. But, in all the other instances, as elasticity, expansion, and all [natural] mechanical forces, they are not the sources of actual power. *Self-action*, then, is a *distinguishing* characteristic of animals and vegetables; for the principle reaches *every part of their organization*.” A plant droops and rises again by its vital power. (*Comm.* vol. i, p. 45.)

What the author has said of our knowledge of the *force of gravity*, he has also often affirmed of the *chemical* and all other inorganic forces, — and nothing but the gross misrepresentation of the reviewer upon this fundamental point could have induced the author to prolong this discussion. In contradistinguishing the *chemical* forces from the *vital* properties, the author, among other general remarks of a similar import, has the following:—

“In respect to the *forces of chemistry*, is it known with any certainty, what particular causes are instrumental in effecting the chemical union of different species of matter? Are there not most remarkable revolutions in opinion as to the nature of magnetism, electricity, heat, and light, and the laws by which they are governed; and is not the doctrine of oscillations liable to be supplanted by another, to-morrow? Indeed, at this moment, there exist the theories of emanation and undulations of light. But, whether one or the other be true, it affects in no degree, our knowledge of the laws of reflection, refraction, &c., by which the specific existence of light is ascertained. . And, although the phenomena of light are thus diversified, and present, as it were, a variety of laws, we know less of [the nature of] light than we do of darkness. Finally, *all that we know* of matter, [organic or inorganic,] and of the sources by which this knowledge is acquired, *arises from effects*.” (*Comm.* vol. i, p. 45.)

Let us now hear Professor Daubeny, of the Oxford University, as to the nature of *force*, and how with the author, he supposes the *chemical* forces to be resisted by *forces* peculiar to the *living* body. The Professor has lately published a work in which he derides all the doctrines of the vitalists, and to whom, therefore, it may be presumed the reviewer will have no objection.

“The putrefaction of vegetable and animal matter,” says Daubeny, “appears to be produced, not by any sudden cessation of those *affinities* which had previously bound their respective elements together, but by the predominance over them of *other* natural *forces*, which we may, without much difficulty, conceive to have been *controlled* under the circumstances in which the *liv-*

ing body is placed.”⁽¹⁾ *Graham*. — That is to say, “controlled” by the *vital* forces.

Take up any author on chemistry and you will find the same thing. Here is Professor Turner, who says, —

“The tendency of cohesion is manifestly to bring the ultimate particles of bodies into immediate contact; and such would be the result of its influence, were it not *counteracted* by an opposing force, a principle of repulsion, which *prevents* their approximation.” Nay, *vis inertiae* itself is almost admitted among the *forces*. “The indifference of matter,” says Turner, “to either state has been expressed by the term *vis inertiae*, as if it depended on some peculiar force resident in matter; but it *arises*, rather, from matter being absolutely passive, and thereby subject to the influence of every force, which is capable of acting upon it.”⁽²⁾ — *Turner*. (Compare this with the author’s definition of *life*.) N. B. The foregoing may apply to *mind* as well as to matter.

And now for the *dictionary*. “FORCE, L. *fortis*. That physical property in a body which *may produce* action or motion in another body, or may counteract such action.” “*Mechanical* force, is the power that belongs to bodies *at rest* or in motion. The presence or tension of bodies *at rest* is called a mechanical force, and so is the power of a body in motion.”⁽³⁾ — *Webster*.

The author will now pass on to distinguished and recent physiologists as to their use of “vital principle” and “organic force,” from which it will appear that the author employs the terms in their acceptance. Thus, Dr. Carpenter? —

“The terms *vital principle* and *Life*,” he says, “are commonly employed almost synonymously, to imply the *controlling agent* by which the phenomena of living beings are directed, if not *immediately produced*.”⁽⁴⁾ — *Carpenter*.

And now as to “*Organic* FORCE.” Thus, Müller: — “There is in living organic matter a *principle* constantly in action, the *operations* of which are in accordance with a rational plan, so that the individual parts, which *it creates* in the body are adapted to the design of the whole; and this it is which distinguishes organism.” “The organic force is manifested only in the organic compounds produced in those bodies. The *mere accidental coming together* of the elementary components is *not capable* of producing organic matter.” “Even animals themselves have not the power of generating organic matter out of simple inorganic elements or *binary* compounds.” He also calls it the “*creative force*.” Thus;

(1) Quoted from the British and Foreign Med. Rev., Jan. 1841, p. 136.

(2) Turner’s Elements of Chemistry, Introduction. 1835.

(3) Webster’s Dictionary.

(4) Principles, &c. p. 131.

—“The *creative force exists* already in the germ, and *creates* in it the essential parts of the future animal.” It is also a “*creative power*.” “The formative or organizing principle is a *creative power*, modifying matter blindly and unconsciously.” — Müller.

Müller, indeed, goes far beyond the present writer or Mr. Hunter, in supposing the “organic force” capable of rapid motion, — rapid as thought itself; and he also says it is capable of “multiplying itself,” and “exerts its influence even beyond the surface of an organ, as shown by its effects on the chyle, in maintaining the fluidity of the blood,” &c. “The *Vital Principle* is in a QUIESCENT state in the egg before incubation.”(1) — Müller.

There is much of this in Müller, hereabouts, though he afterwards loses sight of it in pursuit of the “chemical forces” to which he ultimately gives as much importance as to the organic force.

And now Liebig, who has his *substantial chemical forces* as his “*vital principle*” : —

“In vegetable physiology,” says Liebig, “a leaf is in every case regarded merely as a leaf, notwithstanding that leaves generating oil of turpentine or oil of lemons must possess a different nature from those in which oxalic acid is formed. *Vitality*, in its peculiar operations, *makes use of a special apparatus for each function* of an organ. Vegetable physiologists, in the study of their science, have not directed their attention to *that part* of it which is *most worthy* of investigation.” — Organic beings “constitute a form of reproduction *independent of chemical processes*. The *chemical forces are subject* to the *invisible cause by which* this form is produced. Of the *existence of this cause* itself we are made aware only by the phenomena which it produces. Its laws must be investigated just as we investigate those of the *other powers* which *effect motion and changes in matter*. The *chemical forces are subordinate* to this *cause of life*, just as they are to *electricity, heat, mechanical motion and friction*.” — Liebig. [Observe the contradistinction between “*chemical forces*” and “*electricity, heat, and mechanical motion*,” which the reviewer confounds with “*forces*.”] Again, says Liebig, —

“The *vital principle* is only known to us through the peculiar form of its instruments, — that is, through the organs in which it resides.” — “In the same way the vital principle governs the *chemical powers* [same as “*forces*”] in the living body.” — “If the food possessed life, not merely the *chemical forces*, but *this vitality*, would offer resistance to the *vital force* of the organism it nourished.” — “The *vital principle opposes* to the continual action of

(1) Müller's Elements of Physiology, pp. 9, 18, 23, 25, 27, — 1832.

the atmosphere, moisture, and temperature upon the organism, a resistance which is, in a certain degree, *invincible*.”⁽¹⁾ *Liebig*.

Now the only difference between *Liebig* and the author, whether it respects *vital* or *chemical force*, consists in the doctrine of the latter that, “there is no philosophy in the unmeaning multiplication of causes,—especially when the superadded ones will not explain a single phenomenon, or a single result appertaining to living organized matter.” (*Comm.* vol. i, p. 99.)

But, where is the difference between the foregoing, and the “vital properties” and “vitality,” (according to the mystifying school,) “making use of *chemical forces*?” (See examination of this subject in *Comm.* vol. ii, pp. 89, 121, 122.)

And thus *Tiedemann*: “Organic beings,” he says, “are endowed with *powers* of a *particular kind*, namely, organic powers.” “All the qualities of organic bodies should be looked upon as the *effects* of life. Even those phenomena seen in them, which they exhibit in common with inorganic bodies, undergo modifications of their specific action, and should be considered as subordinate to the organic powers.” “Chemists have not succeeded [then nor since] in reproducing organic combinations, as they have done the inorganic compound bodies.” “There must be in living bodies a *peculiar power*, differing from the chemical affinities, which determines the forms of bodies not endued with life, and the action of which produces the diversity which organic forms with similar composition exhibit.” “Even when the life of organic bodies is extinct, we should consider the *qualities* which they possess, from the time of death to the complete resolution of organization, as results of the organic powers which have been active in them.” [This is a doctrine of the Commentaries.] “Already,” he adds, “it has been more than once attempted to deduce life from the laws of mechanics, physics, and of chemistry. This error has been committed by the physiologists and physicians of the iatromathematic and iatrochemical schools. In every age, distinguished naturalists discovered this error and opposed it.”⁽²⁾ *Tiedemann*. Observe, “*peculiar power*” and “organic powers.”

The vital principle or organic force is everywhere the presiding genius in the foregoing work, and is defended in all the attributes that are ascribed to it by the present writer.

And *Bichat*, too, whose “writings” the British and Foreign Medical Review laments, “are almost forgotten,”⁽³⁾ employs the word *vital force* in the same sense as the Commentaries, in a mul-

⁽¹⁾ *Liebig's Organic Chemistry applied to Agriculture and Physiology*, pp. 36, 353—358. London. 1840.

⁽²⁾ *Tiedemann's Physiology*, pp. 7, 9, 28, 30. — 1824

⁽³⁾ July, 1839, p. 186.

titude of instances. It is his favorite substitute for vital properties. Thus, "the disengagement of *caloric* is always subordinate to the *state* of the *vital forces*." "The *vital forces*, especially the *tonic power*, have a very decided influence upon the extrication of *caloric*." And here is something for the chemical doctrine. "If chemists apply their theories to these *morbid changes* of heat, instead of considering them as a necessary consequence of the *state* in which the *vital forces* are then found, they will necessarily find in them an insurmountable obstacle." And here is something to aid the reviewer's conception of the author's philosophy of bloodletting and of the operation of other remedial agents. "It is *undeniable* that all remedies have for their object the *restoration* of the VITAL FORCES to the natural type, from which they have been driven by disease. Since the morbid phenomena may be considered as *different alterations* of these *forces*, the *action* of remedies should also be viewed as the means by which these alterations are to be brought back to the natural type." (1) *Bichat*.

In the British and Foreign Medical Review "the vital principle" is also fully acknowledged, and the philosophy of the chemists as applied to organic beings and the humoral pathology condemned in some of the articles, and to which the present writer has referred (with the commendation to which the reviewer alludes, p. 401,) in his "Commentaries." (See vol. i, pp. 41, 530, 714; vol. ii, pp. 399, 415, 427.)

The author now comes to a more specific defence of his use of the term *force*, in its different acceptations when applied to organic and inorganic beings. In the first place, however, to avoid a verbal criticism, (which the reader will soon see extends beyond the word *force*,) the author defined exactly the meaning of several words, and that meaning is preserved, respectively, (and the author believes without a conflicting instance,) throughout the "Commentaries." An absolute distinction between the physical and vital forces or powers is fundamental in the work; and when *force* is employed in relation to *organic* beings, it is always as defined. Thus:—

"The words *vital principle*, *vital power*, *organic force*, *organic power*, are used synonymously, and refer to the universal cause of animal and vegetable life, and are employed as collective terms. *Vital properties*, *vital powers*, and *vital forces*, signify the various elements of the *vital principle* or *vital power*, as they are manifested in *irritability*, *contractility*, or *morbidity*, *vital affinity*, *sensibility* and *sympathy*. (Com. vol. i. p. 10.)

Again, "The forces of physics and of chemistry produce *precise* and *uniform* results; whilst those of life are attended by an *endless variety* of modifications. 'This is, in itself, an ample proof that

their essence is *wholly distinct*. One set of forces operates *mainly* upon inorganic matter, and are *not acted upon*. The other forces operate *exclusively* upon *organized* matter, are more or less influenced by the former, and are *acted upon* by foreign causes. (See Turner's definition of force, p. 15.)

"The former are always the *same* under all circumstances; the latter exist in *distinct modifications of kind* according to the *varieties of texture* which they animate, and they are *constantly modified* in their nature by an *almost endless variety of foreign agents*, and they may be EXTINGUISHED by those agents. Their alterations constitute the *essential* pathology of disease. We may *calculate the results* of one with *perfect accuracy*;—we look with *prophetic ken* to the return of a comet through a long vista of ages. But INSTABILITY is the *great characteristic* of the *vital* forces, and the exact phenomena which we may contemplate *at this moment* may *vanish at the next, never to be repeated*. The *physical* and *chemical* forces are ALWAYS OPERATING *per se*, with *entire independence*, and *their existence is perpetual* as their nature is *unchangeable*. The *vital* forces, *on the contrary*, generally produce *VISIBLE* actions *only when* they are *acted upon*, and the *mind* itself is one of the agents. They become *more or less passive* the moment *those influences are* WITHDRAWN, and they may be EXTINGUISHED in a moment *by those influences*. (See *Reply*, pp. 5, 10, 13, 14.) They have a *specific final cause* which appertains *exclusively to organized matter*. This final cause, which consists in carrying on the processes of life, has a *natural end*, when the vital forces become EXTINCT, and *give place* to the *full operation* of the forces of *chemistry*. The latter *then lay waste* what had been the work of the former, and thus prepare new materials for the complex process of ultimately fitting them for the work of the *vital* forces in other animated beings.

"These are BROAD and IMPORTANT DISTINCTIONS. They place the respective forces IN OPPOSITION to each other. The distinctions indicate not only the nature of the forces, but the rank of all matter.

"Powerful efforts are making to *substitute* the forces of chemistry and other physical powers for those of life. We shall oppose this doctrine in all our future disquisitions; and it is therefore proper that we should, in this place, *point out the distinctions* as well as we may." (*Comm.* vol. i, p. 30—31. — Also, *Reply*, p. 5, 6.)

The author will subjoin, in a *note*, a farther illustration of the doctrines of the "*Commentaries*" as to the nature of "*Laws*," and with a particular reference to what is said in this *Reply* at page 5, 6. (')

(1) "We allude to GREAT VITAL LAWS, not to the ACCIDENTS of disease. Mr. Clendening asks, 'how should there be a rule in physiology, morbid or healthy, without exceptions?' In his acceptance of a *rule*, as illustrated by his subject, there is none; and we think it might be shown, in such instances, that the term is objectionable. Such general rules are *subject to great instability* from *accidental causes*, and they have no immediate connection with any of the *laws of nature*. But in respect to the great principles in physiology, we know of no exceptions in the natural state of the body; and this is, *prima facie*, a strong ground for analogical inference, as to the principles upon which morbid condi-

And again the author says, "We have already explained, that we are almost indifferent as to the *name* which the forces of life shall receive, so long as authors continue to apply the *same import* to more favourite words than 'vital principle,' or 'vital powers.'" (*Comm.* vol. i, p. 29.)

The foregoing are fundamental doctrines throughout the "Commentaries," and will illustrate other parts of the review besides the author's most perverted *definition of life*, which he will now repeat:—

"The foregoing considerations would lead us to regard life as a cause, and to define it as consisting of certain *SPECIFIC properties* [or forces] *appertaining* to organized matter, which are more or less capable of resisting the destructive agencies of *inorganic* matter, and the *forces* to which *it* is liable, and of protecting against them the matter in which they are *INHERENT*." (*Comm.* vol. i, p. 18.)

Now we have in the definition *two* kinds of forces,—namely, the *organic* force, and the *chemical* forces. The organic force, or "vital properties," according to the definition, is "more or less capable of resisting the destructive agencies of inorganic matter, and the forces to which inorganic matter is liable." That is to say, the organic force is capable of protecting itself, on all ordinary occasions, against the injurious influence of external agents, and the living body against the forces to which inorganic bodies are liable,—that is, against chemical decomposition, which would ensue in the organized body were it not for the protection of the organic force. (See Daubeny's and Turner's explanation, p. 14, 15.) But, to render this meaning obvious to an "ordinary capacity," it was added to the definition, "and of protecting against them (the destructive agencies, &c.) the matter in which they (the vital properties) are *inherent*." The reader will observe that *organic force* is sub-

tions depend. Sooner or later the apparent exceptions are brought within the general *law*. Thus, it has been supposed that the circulation of the brain has a law peculiar to itself, and so, also another for the penis. But one of the conclusions is purely hypothetical, and the other is based upon the microscope, and has been shown to be an error."

Again, "When we are told that purulent matter is equally the result of a vital process, and of the putrefaction of blood, or of the solids, or is at one time generated by the action of the extreme vessels, and at another may form itself spontaneously in the blood; and that ulceration, according to M. Louis, and some others, may depend on *inflammation*, but again is owing to an '*opposite cause*;' and that the chemist may form the gastric juice in his laboratory, wherewith he imitates digestion, we consider such 'exceptions' to the *laws* of nature as an indefensible violation of 'general rules' which admit of no exception.

"The vital powers are certainly distinguished by an instability as it respects their liability to partial modifications; and it is upon this that much of the theory of medicine hinges. But they are always the same powers, affected in the same way, *ceteris paribus*, by the same causes, and leading to the same results according to their modifications respectively. It is the business of observation to ascertain what these changes are, and to record them as perpetual landmarks in the great field of Nature, where they may always stand, rescuing our science from the hands of mere empiricism, and guiding us under the name of general principles, which are as applicable, through all time, to the circumstances of any given modification, as others are to the most perfect integrity of the vital functions." (*Comm.* vol. i, pp. 626,

stituted, in this explanation, for *vital properties*, (which are synonymous with the author, and which occur in the definition,) that the substitution may meet the erratic criticism of the reviewer.

The reviewer, when employed in perverting the author's doctrine as to the "*organic force*," and "*vital functions*," and endeavouring, by turning the discussion upon the nature of *mechanical force*, and by substituting "some kind of (*physical*) action" for the author's argument as to "*vital functions*," as well as by more direct methods, to perpetrate the offence of making the author confound the *organic* with the forces of *dead* matter, artfully turns his physical illustration upon the author's expression, "The forces (of life) are to a certain extent in a passive state, *when* not excited by their appropriate stimuli," (Reply, p. 8,) after the following manner:—

"What should we think of a person who should talk about a 'passive force' existing in *water*, by which are affected the mighty operations of the *steam engine*?" (1)—(Rev. p. 386.)

The foregoing expression of the author is the groundwork of the diatribe about the necessity of "*some kind of action*" when *physical* force is present. But, we have seen that the reviewer affirms that

"By philosophical writers on *any* department of science, the term *force* is only applied when an *action of some kind* is taking place." (Rev. p. 386.)

Let us now present the subject according to the premises in the "Commentaries," which relate to "*vital functions*" of an *appreciable* nature, and it will be found that there is one "philosophical writer," at least, who thinks that what is denominated "*vital force*" by the most illustrious physiologists, may exist in a *perfectly passive* state,—without the least "*action*" of any "*kind*,"—and yet that *vital force* or "*vitality*" may be present. This author is *Dr. Carpenter*. But, in the first place, let us hear the reviewer a little farther, since he has so identified his own cause with that of *Dr. Carpenter*, it would be unjust in the author to hold them distinct in this mutual concern. For this purpose, the author must temporarily pass on to another subject, where the reviewer says that,—

"The *onus probandi* rests upon those who maintain the existence of a *principle* which others declare to be unnecessary." "We *ASSERT* that *death* can never take place without some *important change in organization*. Let our opponents prove the contrary. (2) Further, we *assert*, that in *all cases* in which an organ-

(1) See *Dr. Carpenter's* "still closer parallel of the *steam-engine* with the mechanism of *organized structures*,"—in his *Principles*, &c. p. 132.

(2) A dog may be killed in an *instant of time* by applying a drop of hydrocyanic acid, or of an alcoholic solution of the extract of *nux vomica*, to the tongue. A paroxysm of anger, or of joy, will destroy a man with the same instantaneousness. *How* do they

ized body, such as an *egg* or *seed*, exhibits a *vital power* of resisting the decomposing effect of external agents, *that power is due to some amount of vital action* going on in it; and it is for our opponents to prove that no such action is going on." "This Dr. Paine has by no means done."

But, what mean the expressions, "*power of resisting*, and *that power is due to some amount of vital action*"? (Rev. p. 390.)

The author will now explain how far he considers "action of some kind" indispensable to *force*, whether physical, chemical, or organic; and, since what he is about to say is no where denied in the "Commentaries," but fully laid down in the work, it will only show, the more forcibly, the reviewer's falsification of his author's doctrines.

1. As to *physical force*. This, in relation to gravitation the author has already explained. He also holds that the force of cohesive attraction *must* constantly operate, or be *in action*, or the particles of matter would fall asunder. And so on. (*Reply*, p. 13.)

2. As to the *force of chemical affinity*, that, also, must be in perpetual *action*, or the very elements would disunite. (*Reply*, p. 14.)

3. *Organic force*, even in the egg and seed, must be as much in *constant action*, and in a way analogous to chemical affinity, or the *ternary, quaternary*, &c. combinations *peculiar* to organic beings, and which depend on the *organic* force, would separate spontaneously or become the subjects of chemical decomposition. This is even expressed in the author's *definition of life*, so obnoxious to the reviewer. As to the "seed" and "egg," the "Commentaries" say, —

"The history of the seed and egg probably supplies one of the most remarkable illustrations of design that can be found in nature, — especially that of the *former*. They are the *ONLY* instances where the entire forces of life cease their *ordinary* [appreciable] operation *without becoming extinct*; and, were it not for this interval of *repose*, the species would probably disappear, — since, even if the vital forces *carried out the development* of the seed into the plant, the chances of preservation would be infinite-

disorganize the body? Upon *what* do these causes operate? And, can the reviewer suppose that a fulfilment of his requisition is necessary to the position of the vitalists that in such, (and therefore in all ordinary cases,) death is not the result of "disorganization," but of an *extinction* of the *vital powers*? No agents will afterwards restore animation, because there remains no vital principle upon which the agents may operate. Are not these *facts* as good, at least, as the reviewer's *assertions*?

Again, it is equally assumed that disease consists in disorganization. The whole body is disorganized in idiopathic fever, and locally in inflammations. But, pleurisy, croup, &c. may be mainly cured during the process of venesection; or, a dose of quinine, exhibited just before an expected violent paroxysm of an intermittent, may prevent its occurrence. Do these remedies operate by instantaneously repairing disorganized parts? What is the *modus operandi*, or how does the quinine send abroad its instant influence from the stomach?

ly diminished, — and since, also, such as ceased their operation at the maturity of the seed, are supposed by the proposition to become extinct.”

“The rain falls, and there is no check to those actions which had brought the seed to maturity; but the vital stimuli urge them on, and the forces of life pass the ordinary limit of quiescence without a momentary suspension of their actions. These actions, and all their results, are exactly the same as after the seed has been dormant for a thousand years; and their uninterrupted progress in the former instance shows an identity of force before and after germination, and thus connects the principle, on which a renewal of action depends, with that of uninterrupted action. This illustration also shows, that a perfect integrity of the vital forces exists during the state of quiescence, and it is moreover opposed to all analogy, that such forces may be reproduced after they shall have become once **EXTINCT**.

“Something like the foregoing is seen in the *hibernating* animals during their *state of torpor*. The influence of *cold* upon the forces of life nearly extinguishes all vital actions; but that life is undiminished, is sufficiently manifest when the farther and more profound operation of *cold* re-establishes all the phenomena of life in their highest vigour.” (*Comm.* vol. i. p. 21—22.)

The reviewer, not content with pirating upon *Dr. Carpenter*, has actually appropriated *as his own* the illustration contained in the last of the foregoing paragraphs, to carry out his conflicting doctrine that “some amount of vital action must exist in the living egg and seed,” and by which he was attempting to persuade his reader that *Dr. Paine* had denied the existence of that perpetual action which obtains with vital affinity during the lowest degrees of life. Thus:—

“We therefore feel no doubt that the *difference* in the power of *resisting cold* possessed by a living and dead egg is to be accounted for on precisely the same principles as that which may be observed between an *hibernating* and a dead animal.” (*Rev.* p. 390.)

Nevertheless, the reviewer may have obtained his idea from *Dr. Carpenter*, who, in reference to the foregoing subject, says, —

“The state of *hibernation*, to which many animals are subject, partly resembles the torpor of the seed: still there is never in them a **TOTAL SUSPENSION** of *vital action*, but only a great diminution.” (*CARP. Princip.* p. 142.)

Now, this is so like the author’s illustration, that it behooves him to say, that he had not seen *Dr. Carpenter’s* work, (but only the review of it,) till long after the *Essay on the “Vital Powers”* was printed. As it seems improbable, therefore, that this illustration should have occurred to three writers, it is not unlikely that the reviewer leaned rather upon *Dr. Carpenter* than the author.

Is it asked, why, after death, and when decomposition is *prevented*, are the *elements still held together* in their *pre-existing* combinations? By cohesive attraction, and, as *Tiedemann* says, through

"results of the organic forces which *have been* active in the *living* body." (*Reply*, p. 17.)

The author is now prepared to show how one "philosophical writer," at least, (Dr. Carpenter,) does not allow of *any* "kind of action" in the living egg and seed, under particular circumstances. But, if the reader will compare the following statements by Dr. Carpenter and the reviewer, he will perceive that Dr. C. does not disagree with the reviewer, since the latter only supposes the existence of "some amount of vital action" *when* the egg and seed are exposed to the action of external *stimuli*. Herein, therefore, we have another "philosophical writer" in the reviewer himself, who more than sustains Dr. Paine's "position" that "the forces of life are to a *certain extent* in a passive state when not excited by their appropriate stimuli."

For the foregoing purpose, we require nothing more than the *direct avowal* in the quotation just made from Dr. Carpenter; but, the question being of some moment, we will hear the gentlemen farther; and first, the reviewer, who says:—

"We **ASSERT**, that in all cases in which an organized body, such as an egg or seed, exhibits a vital power of *resisting* the decomposing effect of *external agents*, that power is due to *some* amount of *vital action* going on in it, and it is for our opponents to prove that no such action is going on." (*Rev.* p. 390.)

And so Dr. Carpenter:—

"But the mere **CESSATION**," says Dr. Carpenter, "whether apparent or **REAL** of *vital ACTIONS* *does not constitute death*. Their **SUSPENSION** may result from the want of *stimuli* which are necessary to *excite the dormant properties to exercise*. Thus, seeds may *preserve their vitality* for periods of indefinite length, if not exposed to those agents which will stimulate them to germination." "It is scarcely correct in such a case to say that the seed is *alive*, since life (in the sense in which most philosophical modern physiologists employ it) is *synonymous* with *vital action*; but it is possessed of *vital properties* or of *vitality*, so long as no destructive changes take place in its organization." (1) (*CARP. Princip.* p. 140.)

Now, it may be difficult to interpret the foregoing passage; but it certainly begins with the declaration that "vital action" is not necessary to life, and this in the reviewer's acceptance of insensible "action" is more than the "Commentaries" have contended for. Will Dr. Carpenter, also, enlighten us farther as to the condition of the egg and seed when they are *neither* "dead" nor "alive," and yet "possessed of *vital properties* or *vitality*?" Immediately after the foregoing extract, Dr. Carpenter quotes an instance in which Raspberry seeds produced "three plants" after laying in the "stomach of a man 30 feet below the surface of the earth probably for 1,600 or 1,700 years," as an illustration of the *intermediate* state of life. But, however Dr. Carpenter may *fix* this matter, and have it in the same paragraph that the living seed, in the

(1) Allow any amount of "vital action," it would not show that "life is constituted by the *functions*" and especially since the premises suppose there is no "vital action" when vital stimuli do not operate. The *vital properties*, therefore, constitute life, of which *all* vital action is only a *result*.

absence of stimuli, has *no action* whilst *action* is *necessary* to life, and the living seed is yet *alive*, but *not alive*, it is important to the "Commentaries" where Dr. Carpenter is interested, that it should be shown from his work *itself*, that he makes life to consist in *action*, and yet in the vital properties; since, as just shown, "the seed" may be "possessed of *vital properties* or *vitality*, so long as no destructive changes take place in its organization," and yet have *no action*. Now we shall have adjusted this luminous explanation, by quoting a passage just preceding the last. Thus:—

"That there are cases in which a *very feeble* degree of *vital action* is sufficient to *preserve* the *properties* of a structure, will be presently shown. But when *THESE ALTOGETHER CEASE*, the organism must be secluded from all the external influences which could injuriously affect it, in order that *ITS VITALITY* may be *PRESERVED*." (Carp. *Princip.* p. 140.)

Now compare all this with the "Commentaries," Vol. I. p. 22—28;—and, let us also ask how the *vital properties can altogether cease* and yet "*the structure*" have its "*vitality* preserved," especially seeing that it is affirmed in the quotation preceding the last that "*life* is synonymous with *vital action*," and "*vital properties*" with "*vitality*," and more especially as it is clearly affirmed in the first clause of the last quotation, that "*vital action*" is *necessary* "to preserve the properties of a structure;" though this is contradicted in the next clause. The reader will also see another contradiction in the first quotation, where it is said that "*the suspension of vital action* may result from the want of *stimuli* which are necessary to *excite* the *dormant* properties to *exercise*,"—it being thus affirmed that *vital actions* are a *consequence* of the *exercise* of the vital properties. This is the nature of the argument held with Dr. Carpenter in the "Commentaries," and which has been so falsified by the reviewer that the subject will be again resumed. In the meantime the author may say that it was partly the object of his reference to Dr. Carpenter, to show that he contradicted himself in the foregoing manner. It is also worth observing, in reference to what will be said of bloodletting, that Dr. Carpenter, like the reviewer, in these quotations, speaks of the *action of stimuli upon the vital properties*, and that these properties are "*excited to exercise*." Now, such contradictions must always abound whenever a writer is at war with nature.

As this "examination" is designed for greater purposes than a mere *reply*, the author will farther avail himself of the foregoing doctrine of Dr. Carpenter, that "*vitality*" and the "*vital properties*" may exist for more than a thousand years in a "*seed*" *without* any *vital action*. Now, if "*vitality*" or "*vital properties*" can so exist in any one case, "*the functions*" or "*vital action*" do not constitute life in any case: but *life*, (according to the argument with Dr. Carpenter in the "Commentaries,") must, as here

allowed, *consist in the vital properties*. It is also true, as affirmed by the reviewer, that, —

“The doctrine which Dr. Carpenter has propounded respecting *vital properties* is *essentially the same* as that upheld by Dr. Prichard, Dr. Fletcher, Mr. Robertson, and other able writers on the same side.” (Rev. p. 389.)

So that the author has a full admission of his own premises against the assumption by the same writers, that life *consists in vital actions* upon which the vital properties are said to *depend*. If philosophy be worth anything it must obtain in the foregoing case; and the conclusion is important in settling the existence, the nature, and the office of *the vital principle*, and its pathological and therapeutical bearings.

The author now approaches other not less extraordinary misrepresentations of fundamental parts of his work, — and these are, 1st, an effort of his reviewer to convey the belief that the author inculcates the absurd doctrines that the organic or any other force can exist independently of organic or inorganic matter; and 2d, that, in employing *vital properties* in the same sense as *vital principle*, the author has *as many vital principles as properties*. The following are some of the passages to the foregoing effect. First, as to the *separate* nature of force: —

“We cannot ourselves,” says the reviewer, “conceive of a force as having an existence distinct from the matter which manifests it. The Creator, in giving origin to that which we term matter, by that very act *created the forces* by which different material bodies operate upon one another.” (Rev. p. 386.)

And so Dr. Carpenter: —

“The Divine Creator of the Universe ‘has, by creating his materials, endued with certain fixed qualities and powers, &c., and made all their subsequent combinations and relations inevitable consequences of this first impression.’” (Carp. Princip. p. 134.)

Now this very doctrine is elementary in the “Commentaries,” and there is sometimes quite a coincidence between the language of the reviewer and his author. Thus, in the very next paragraph following that from which the reviewer has quoted the author’s definition of life, is this statement, namely, —

“It cannot, therefore, be said, in an abstract sense, that the forces of life are the primary cause of organization, till it be shown that organization is not the substratum in which the forces are originally *inherent*. He, who *created the powers of life*, associated them with that organization which they were destined to unfold. *The rudiments have been perpetuated in connection with the living forces* since they came from the hands of the Creator, and are the *present source of all animated beings*.” Comm. vol. i, p. 18.

Again, “Dr. Paine,” says the reviewer, “maintains that they [the vital properties] *hover about* with a kind of undefined existence, ready to enter organized tissues when ready for their reception,” &c. (Rev. p. 390.)

“Further, Dr. Paine *tells us* in one breath, that the vital properties or forces are

essentially distinct from organized matter itself, and that they *can go away* and leave this matter in a state of perfect integrity, whilst in the next he informs us that they cannot exist without it. What becomes of them, then, when they leave the organized body to shift for itself? If they have an existence so essentially distinct as to be capable of leaving it, it stands to reason that they must be capable of existing without it, yet Dr. Paine says they cannot. A WRITER WHO CAN SO CONTRADICT HIMSELF SCARCELY NEEDS TO BE EXPOSED BY US." (1) (*Rev.* p. 387.)

But, does not the contradiction consist in a most wilful misrepresentation of the author's doctrine? From what has been hitherto said, it is scarcely necessary to repeat that the author regards the vital principle as being "*distinct*" from the sensible matter of organization in the same sense in which it is defined by Dr. Carpenter, as being generally entertained by vitalists, and as already quoted, (p. 15—17); that is to say, it is *sui generis*, and of course *different* or "*distinct*" from the matter which it animates. He does not believe, nor has he remotely implied, that the *vital principle* or the *vital properties* can exist independently of organic matter, nor that they "hover about it;" and he believes with all other vitalists that when the *vital principle* "leaves the organized matter," it does not "go away," (nor does he "tell us" so, or *imply* it,) but becomes "*extinct*," and that the "body, in shifting for itself," becomes the subject of chemical agencies. Nor is this all; for it is the principal object of the Essay on the "Vital Powers" to make out the several foregoing propositions. Nay more, these very premises are directed against Dr. Carpenter's theory of life; and here, by the way, the author will have an extract from the "Commentaries," relative to one of the foregoing misrepresentations. Thus:—

"We find the following statement in the last No. of the British and Foreign Medical Review.—'The *dependence* of the *vital properties on the structure*, Dr. Carpenter enforces by a consideration of the nature of death; showing, that when integrity of the organization is maintained by the continuance of *its vital action*, (particularly nutrition,) the change of structure consequent on the cessation of the action *necessarily* involves the loss of vitality.' (*Comm.* vol. i, p. 22. See parallel quotations farther on, and *Reply*, p. 25.)

Now here we have "*vital properties*" *depending*, 1st, on *vital action*, 2d, on the structure; but when the integrity of organiza-

(1) There is much in the review that labours to convey the belief that the author has propagated the monstrous absurdity that the vital and other properties of matter can exist in a state independently of that matter. The author will make, in this note, one quotation more from the Review.

"Subtract from *our notion* of matter all those properties by which we characterize it, and what remains? Nothing. On the other hand, we may ask, *if it is possible* for the properties to be separated from the matter itself? Can they have a distinct existence?" And so on. (*Rev.* p. 386.)

tion is "not maintained by vital action, the cessation of vital action necessarily involves the *loss* of *vitality*," or of those "vital properties" which "depend on the structure." "What, then, become of those vital properties" when they are thus "*lost*" and "leave the organized body to shift for itself?" Dr. Carpenter says, with Dr. Paine, that they cannot exist independently of the matter in which they are *inherent*, and yet he says that very matter may *lose* them. But, lest the reviewer, who commended the doctrine, should again *impeach* his own interpretation of Dr. Carpenter's views, they shall be presented directly from the work itself. Thus:—

"The term *death*, when applied to *individual* parts, may signify the *loss* of their *peculiar vital properties*, either from some change in their organization, or from the cessation of those *actions* by which their *structure* is maintained in its due perfection." (CARP. *Princip.* p. 139.)

Now Dr. Paine has not even implied so great an absurdity as that the vital properties may be *lost*. And thus Dr. Carpenter again:—

"The term *death*, therefore, has more than one signification. It may be used to denote the *SEPARATION* of THAT *BOND OF UNION* which so *PECULIARLY unites all the functions* of the living system." (CARP. *Princip.* p. 139. This and the foregoing are the "significations.")

What, then, is this "*bond of union*," but Dr. Paine's "vital principle,"—and where does it "go" when it "separates" from the body? If the reader, also, will connect the two extracts together, which are parts of *one* paragraph, he will see that Dr. Carpenter attributes "vital properties" to his "bond of union" as much as the author does to his "vital principle."

What must we think of those who discourse in the foregoing manner, (and expressions of the same nature abound in Dr. Carpenter's work, and in the review of the "Commentaries,") where they are simultaneously employed in affirming that these "vital properties" are merely the *results* of vital *action*, though at the same time declaring, as will soon be seen, that they were *created* in the very *elements* of matter? Must such contradictions, because exposed in the "Commentaries," (vol. i, pp. 22—28,) be met by the worst fabrications for the purpose of imputing a "contradiction" to one who has probably in no single instance merited the imputation? The author would have cheerfully submitted to any severe analysis of any part or of the entire work, conducted upon the common principles of honour.

Finally, the author repeatedly states his belief that when the body dies the vital principle becomes "*extinct*." Thus:—

"This part of our subject naturally leads us to speak, *again*, of the *COMPLETE EXTINCTION* of the forces of life, when the spiritual leaves the material part; and of the impossibility of supposing the extinction of purely material forces."

"They who appear incapable of comprehending the existence of *such a force* as that of *vitality*, or the vital powers, talk as familiarly about *death*, as any others. But *death* of what? Surely not of the *physical* or *chemical* forces; for these are now for the first time in operation, and in furious operation." (*Comm.* vol. i, pp. 50, 98. Also pp. 30, 31, &c. See *Reply*, p. 19.)

The "*onus probandi*," as the reviewer says, "rests with our opponents, — and let them show that" the vital principle does not become extinct; — at least must they show whither it goes when "*lost*" by the organic being.

The next perversion of the author's Essay on the "Vital Powers" represents the author as making as many "vital principles," (and in the author's acceptation of "vital principle,") as he has "vital properties;" or, as the reviewer says, distinct "*entities*."

"As far as we can understand Dr. Paine," says the reviewer, "all the *vital properties*, as we should term them, appertaining to organized matter, as, for instance, *contractility* and *sensibility*, are to be regarded as *distinct* existences, the combined operation of which produces the phenomena of life. Thus we have not *one* vital principle, but *many*." (*Rev.* p. 387.)

It is, of course, impossible that the reviewer should have understood any such thing, since he has quoted not only from page 10, where the meaning of "vital principle" and "vital properties" is defined, but from other places where that import is carried out, as it is, indeed, throughout the "Commentaries." "*Vital principle*" is expressly declared to stand for the *only* "active principle," and since *irritability*, *contractility*, *vital affinity*, *sensibility*, and *sympathy*, must belong to the *vital principle*, the author has distinctly specified that he considers them only "elements (endowments or properties) of *that* vital principle." This has been already shown by a quotation, (p. 18.) But, it so happens that the author was, more than once, very circumstantial upon this subject. Thus, again:—

"That we may be FULLY UNDERSTOOD in this place, we will *again* state the creed which we wish to make out. We believe that *the vital principle, vital power, organic force, organic power*, are *one substance*, — and we use these terms synonymously. They refer, with us, to a *universal cause* of animal and vegetable life. We believe, also, that this principle has *various attributes*. Thus, we have *irritability, mobility, or contractility, &c.* and the *modifications* of each of these in the same or different tissues form our *partial variations*. These properties are also constantly varied in disease, and these *variations* we call *changes in kind*. The partial modifications, in their *natural* state, we also call *variations in kind*. This is much in conformity with the views of Bichat," &c. (*Comm.* vol. i, p. 81.)

Now the reviewer has quoted nearly the words of the author —

"collective term, referring to the universal cause of animal and vegetable life," (*Rev.* p. 387,) but *conceals* all the author's explanation as rendered here and as before quoted, (p. 18,) and cites another passage from the "Commentaries" (vol. i, p. 29) where the author says, — "The more, therefore, we investigate the subject, the more are we satisfied that life consists in the integrity of the *vital properties* associated with organized matter." Putting these two together, (one from pages 10, and 81, the other from page 29,) he proceeds to extort the conclusion embraced in the foregoing extract. Again, the author says,

"It seems to be admitted, on all hands, that the principle of life, *whatever it be*, is a SIMPLE substance, — that is to say, the presiding forces are not constituted by DISTINCT SPECIES of substances. A contrary supposition would be *adverse* to the analogies of nature, and to the astonishing *harmony amongst the* actions of organized matter." (*Comm.* vol. i, p. 82.)

"All we know of the absolute nature of the *organic force* or *vital principle*, resolves it into several distinct properties or forces, some of which may exist independently of others. Thus, we have irritability, mobility, vital affinity, sensibility, sympathy. We infer their *distinctions* from certain well known phenomena. They appear to be INHERENT in the several parts of the system, and not floating about like caloric or the electric fluid. (*Reply*, p. 16. Müller.) They do not even all belong to the different tissues, since some of them are wholly peculiar to the nervous system." (*Comm.* vol. i, p. 80.)

Let us now ask if there be any difference between this mode of considering the *vital principle* and its several endowments or "properties" and that which is universally observed in relation to the mind? Do not the best metaphysicians speak of *distinct "properties"* of the mind or soul? Nay more, do not eminent phrenologists go so far as to distribute its "properties" among thirty-six supposed organs of the brain? (*Commentaries*, p. 81.) But, whoever imagined that either the metaphysician or the phrenologist, in thus yielding to the phenomena of the soul, ever meant to imply the existence of as many distinct *souls*, minds, or "entities," as they assume properties or endowments? The author, therefore, puts it to any candid reader whether he has not employed the terms "vital principle" and "vital properties" in exactly the foregoing relation of the mind to its imputed properties. There is nothing, however, as already shown, peculiar to the author in this use of the terms or the ideas which they convey.

The reader will farther see in the following paragraph from the "Commentaries," why the author was so circumstantial in defining the sense in which he intended to employ the several terms already explained. Thus, the Commentaries:—

"Mr. Hunter has also given offence by speaking of the powers of life *in the aggregate*, and calling them *collectively*, as we do, the *vital principle*; when it is obvious from the manner in which he treats of irritability, the principle of motion, sympathy, etc. and the modifications of inflammation, that his conceptions of the *properties of the organic force* were the same as understood by his eminent objectors." (*Comm.* vol. i. p. 94.) Was this a hint to the reviewer? ⁽¹⁾

Finally, the author will now have a full justification from *Dr. Carpenter* himself. Thus:—

"IT MUST BE ADMITTED that the conditions of VITAL PHENOMENA are not yet determined with sufficient precision, to ENABLE US TO REFER ALL OBSERVED FACTS, through the medium of GENERAL LAWS, to simple VITAL PROPERTIES; and there might be no peculiar objection to the use of the term VITAL PRINCIPLE as a CONVENIENT expression for the SUM of the UNKNOWN POWERS which are developed by the action of these [vital] properties. But care must be taken not to rest SATISFIED in its use." (*CARP. Princip.* p. 131.) So, also, *Reply*, p. 28.

"Unknown powers of the *vital principle* developed by the action of the *vital properties*"! [Compare this, also, with what is said of the creation of "powers" and "forces" by the Creator; *Reply*, p. 9—11.] And here, too, we have a "vital principle" admitted as *perfectly distinct* from "the vital properties" to explain "certain conditions of vital phenomena which cannot be referred to the *simple vital properties*." And yet, on the same page it is said that — "the doctrine of a vital principle is not only *quite unnecessary to explain facts*, but is *totally unsupported* by the analogies of nature, and by what we know of the Divine Government in general"! (*Carp. Princip.* p. 131.)

"The veriest hermit in the nation

May yield, God knows, to strong temptation."—*Pope*.

Let us, also, have before us the full extent of this quibbling about the *vital principle* and *vital properties*, and substantiate the inductions of the "Commentaries," by other quotations, that our opponents mean the same thing by "bond of union" and "vital properties" as is maintained by the vitalists, and that they attribute to them all the *reality of existence*, and all the *functions and changes* that are claimed by the "Commentaries." This, indeed, has been sufficiently done already; but, since *Dr. Carpenter* is supposed by his reviewer to have effected the "extinction" of the

(1) There appears to be a determination to revive this old expedient. Thus, in an article upon Liebig's "Organic Chemistry applied to Agriculture," etc., contained in the present No. of the *British Review*, there occurs the following remark:

"Many escape from their difficulties by adopting, with *Dr. Prout*, the old hypothesis of the existence of independent vital principles or agents superior to and capable of controlling and directing the agents operating in inorganic matters, on the presence and influence of which the phenomena of organization and life are supposed to depend. The *chemical forces*, acting in the system, are subject to this invisible cause." (*P.* 445.)

Now, by no fair construction can it be said that *Dr. Prout* holds in any event, to more than one vital principle, and *Liebig* is very distinct in inferring but one. (See *Reply* p. 16.) But, where is the difference between the distinct "vital properties," controlling the "chemical forces" of these objectors, and the imputed "vital principles"?

vitalists, (*Comm.* vol. i, pp. 11, *note*, 713,) let us have, in connection with the foregoing quotation, the following extracts, and when we come to the reviewer's remarks on *bloodletting*, our chain of evidence will be complete. Thus, Dr. Carpenter:—

"The term DEATH, therefore, has more than one signification. It may be used to denote the SEPARATION OF THAT BOND OF UNION [*vital principle*] which so peculiarly UNITES all the functions of the living system, RENDERING each so dependent on the other, that the cessation of one involves that of all the rest." (*CARP. Princip.* p. 139.)

Now connect the following, from the preceding page, and which is immediately continuous with the extract relative to the "ability of every *uncombined* particle of matter to exhibit vital actions," etc. (*Reply, forward.* p. 38.)

"Experience and observation lead to conclusions not dissimilar. Organization and VITAL PROPERTIES are *simultaneously* COMMUNICATED to the germ by the structures of its parent; THOSE VITAL PROPERTIES confer upon it THE MEANS of itself assimilating, and THEREBY ORGANIZING and ENDOWING with *vitality*, the materials supplied by the inorganic world." (*CARP. Princip.* p. 138.)

This is exactly the doctrine of Müller as to "*the vital principle*" or "*organic agent*," and who, as we have seen, (*Reply*, p. 15—16.) goes beyond the author and Mr. Hunter in the high attributes which he ascribes to that principle, though he soon afterwards abandons it for the *chemical* and *physical* forces, as set forth in the author's Essay on the Vital Powers. But let us have the parallel from Müller:—

"The *Creative force*," he says, "exists already in the *germ*, and *creates in it* the ESSENTIAL PARTS of the future animal. The germ is *potentially* the *whole* animal. During the development of the germ, the ESSENTIAL parts which constitute the ACTUAL whole are produced." "The ENTIRE VITAL PRINCIPLE of the egg resides in the germinal disk *alone*, and since the external influences which act on the germs of the most different organic beings are the same, we must regard the simple germinal disk, consisting of granular amorphous matter, as the *potential whole* of the future animal, endowed with the ESSENTIAL and SPECIFIC FORCE OR PRINCIPLE of the future being, and CAPABLE OF INCREASING the very small amount of THIS SPECIFIC force and MATTER which it already possesses, BY THE ASSIMILATION OF NEW MATTER." And again, "this *force* exists before the harmonizing parts which are, in fact, FORMED BY IT during the development of the embryo." (1) (*Müller.*)

Now all the foregoing is either, according to Dr. Carpenter, the *work* of the "bond of union" and "vital properties," or, according to Müller, of the "vital principle," and one is as much a *real existence*, an *absolute agent*, a positive "entity," according to the interpretation, as the other,—only, Müller is always consistent in having but *one* agent with certain attributes called "vital properties," whilst Dr. Carpenter has a multitude of *distinct ones*, besides a *general agent*.

(1) Müller's Elements of Physiology, p. 23, — 1835.

The author now comes to another induction more important than the rest, and which settles, by the showing of these writers, all that is claimed by the vitalists, and in its *fullest* latitude. The "vital properties," says one, and the "vital principle," says the other, are the *real* agents, causes, or *entities*, *by which* "the germ is assimilated, and *by which* materials supplied by the inorganic world are *organized* and *endowed* with *vitality*;" or, according to the other, *which* "*creates* in it the *essential parts*, the *harmonizing parts*, of the future animal, and *increases* the very small amount of the specific force and *matter*, by the *assimilation* of *new matter*."

The rudiments or "essential parts" of the animal, therefore, being thus *effected* by the "vital properties" or by "the vital principle," and being exactly the *same* as all "future" additions, it follows irresistibly from the admitted premises that the "future" growth of the animal, in all its details, depends upon the *same agents*, and that *chemistry* and *physics* have no part or lot in the matter. Here is left no loop-hole for the chemical doctrine. We have our premises from the high places which the author had chosen, as the most acknowledged, to interrogate the proof by which nature or art might stand or fall. And what has just been seen of these leading philosophers is the admitted doctrine in every school of physiology that is entitled to respectful consideration. The demonstration is therefore complete; for, to call in the agency of chemical or physical laws, to accomplish precisely the same results at any "future" stage of the organic being as are admitted to be performed in the development of the "essential parts" of that being by the "vital principle" or the "vital properties" alone, would be such a violation of the plainest rule in philosophy, that it can scarcely be supposed that it will not be admitted that the foregoing question is now settled. The author, therefore, connects this part of his demonstration, especially, with his Essay on the "Vital Powers."

Finally, the three last preceding extracts from Dr. Carpenter show a conflict of fundamental doctrines, not only in respect to the assumed dependence of "organization" upon chemical laws, and the "assertion" that life consists in that organization and vital *actions*, but they prove to us how natural it is for artificial systems to be contradicted by their own authors whenever they begin to reason from the phenomena of nature. The doctrine on which Dr. Carpenter most insists, is well described by Müller in the first of the following sentences; whilst in the others, the foregoing conclusions, which Dr. Carpenter has derived from nature, are set

forth in a manner which would, otherwise, lead us to imagine that they had been derived from Müller himself. Thus: —

“Some have believed,” says Müller, “that life, — the active phenomena of organized bodies, — is only the *result* of the harmony of the different parts, — of the mutual action, as it were, of the wheels of the machine, — and that death is the consequence of a disturbance of this harmony.” “But, the harmonious action of the essential parts of the individual *subsists only by the influence* of a *force*, the *operation* of which is extended to all parts of the body, and which does not depend on any single parts. This *force exists before* the harmonizing parts, which are, in fact, *formed by it* during the development of the embryo.” “The VITAL FORCE inherent in organic beings ITSELF GENERATES from organic matter the essential organs which CONSTITUTE the WHOLE being. This RATIONAL CREATIVE *force*, (*Reply*, p. 16,) is exerted in every animal strictly in accordance with what the nature of each requires.” (*Reply*, p. 33. Müller, *ut cit.* p. 23. See Carpenter, *ut cit.* p. 138 — 139.)

The author will now take up that part of the review which more specifically concerns Dr. Carpenter's work; and which, therefore, from courtesy, perhaps he should have done first, especially since, from the large space allotted, it is difficult to say whether the review is intended as a fictitious defence of Dr. Carpenter, or as a misrepresentation of Dr. Paine's “Commentaries.”

“He quite prevents Dr. Carpenter from complaining, however, of this kind of treatment,” says the reviewer, “by the following preliminary apology. ‘We notice Dr. Carpenter's opinions without the advantage of reading his work, on account of his high reputation and the encomiums of his able reviewer.’ WE RATHER SUSPECT, however, that Dr. Carpenter would have been very willing to forfeit the compliment, for the sake of having his views either fairly represented, or passed altogether without notice.” (*Rev.* p. 385.)

The reviewer also pretends that he too has been “misapprehended,” and “misrepresented.” But, did not the reviewer, who professes to be the same as in the present instance, give us a just interpretation of Dr. Carpenter's “views”? The author has quoted fully and verbally, not only the language of the Review, but of Dr. Carpenter, as stated by his reviewer. He has also carefully revised the whole, and compared it with Dr. Carpenter's work and the review, and is now prepared to say that there is not only no “misrepresentation,” but not the slightest “misapprehension.” The reader will find the author's extracts and comments in Vol. I. pp. 11, 22—29, 713—714; Vol. II. pp. 117, 119—120, 577. Why the reviewer has thought it expedient to institute this charge, the reader will easily satisfy himself by turning to those pages. The

discussion, however, is embraced in Vol. I, p. 22—28, — the other references consisting mainly of extracts. ⁽¹⁾

But let us examine the alleged “misrepresentations” and “misapprehensions,” which the reviewer applies as well to himself as to Dr. Carpenter, and therefore makes a joint concern of the defence.

“We shall,” he says, “in our present observations, *identify* our own with them, [Dr. Carpenter’s positions.] more especially as Dr. Paine’s criticisms are directed to both alike;” — “he has so strangely misunderstood and misrepresented our own views.” (*Rev.* p. 387.)

The first charge relates to Dr. Carpenter, and is as follows:—

“Dr. Paine accuses Dr. Carpenter of a want of consistency, in applying physical and chemical laws to the explanation of some of the phenomena exhibited by living beings, whilst he attributes others to the *vital* properties of their organisms.” (*Rev.* p. 387.)

Now, the only paragraph susceptible of the foregoing construction is the first of page 29, Vol. I, which is of a *general* nature, though connected with the antecedent discussion. It is only the last sentence, however, of that paragraph, which refers specifically to Dr. Carpenter, and in that the *imputed* charge of inconsistency is not involved. ⁽²⁾ But the alleged accusation the author now makes, and will abundantly sustain it by quotations from Dr. Carpenter’s work in this “examination.”

The author’s whole argument with Dr. Carpenter, (*Comm.* vol. i, p. 22—28,) is intended to show the fallaciousness of his hypothesis that life consists in “vital action,” and that it must follow from Dr. Carpenter’s premises that life is constituted by the “vital properties” of which the *actions* are only *a result* in connection with organized matter; and that, by his own showing, “he has as much a controlling or presiding agent as Mr. Hunter.” Perhaps the author has already shown all that is necessary upon this question; but, as it is the only one upon which he has imputed contradiction to Dr. Carpenter, and as it is important to the doctrine of life, as defended in the “Commentaries,” we will hear Dr. Carpenter again, though at the expense of some repetition:—

“If the application of the term *life* to some *imaginary* agent which is the immediate cause of vital phenomena, be found *useless* or *injurious*, it may reasonably be inquired what is to be understood by it. If we regard as a *living* being, an organized structure which we observe growing, and moving, and *resisting decay*, it is evidently no improper use of the term to designate by it the *sum of all the actions* performed by such a being, from its first production to its final dissolution.” (See Reply, p. 31, *a contrast*.)

“The term *death*, therefore, has more than one signification. It may be used to denote the *SEPARATION* of THAT BOND OF UNION [see p. 28] *which so peculiarly unites all the functions* of the living system; rendering each so dependent on the other, that the *cessation of one involves that of all the rest*.”

(1) In the review of Dr. Carpenter’s work (Jan. 1839, p. 168,) he is called “Mr. Carpenter,” but in the present, the title of Dr. is prefixed. This is stated to explain the reason why he is called *Mr.* Carpenter in the “Commentaries.”

(2) The note at page 117, Vol. II, is a quotation from the *reviewer*, and the language there quoted corresponds with an extract which will be soon given from Dr. Carpenter. (*Reply*, forward, p. 40.)

Or, when applied to *individual* parts, it may signify the *loss* of their *peculiar* vital properties, either from some change in their organization, or from the cessation of *those actions by which* their structure is maintained in its due perfection; and their consequent subjection to the laws of matter in general. [See Author's definition of Life, pp. 19, 20.] The first change may be termed *systemic*, or more properly *somatic* death, the second *molecular* death." (CARP. *Princip.* pp. 133, 139.)

See, also, *Reply*, pp. 21, 25, 28, where life is also said to consist in actions or functions. But, let us now have an explicit contradiction of all the foregoing statements that life is "synonymous with vital actions," and that it consists in those actions. Thus:—

"Observation of these ACTIONS leads us to arrange them, as has been already stated, into certain groups termed FUNCTIONS: and analysis of the functional changes exhibited by living beings, terminates in REFERRING THEM ALL to certain PROPERTIES possessed by their component structures; which properties stand in the same relation to ORGANIZED TISSUES, as do those of *gravitation, electricity, &c.* to matter in general. They are CALLED INTO ACTION by STIMULI of various kinds, ADAPTED TO EXCITE each of them to ITS OWN PECULIAR OPERATIONS." (CARP. *Princip.* p. 134.)

This is all that the most "exclusive vitalist" ever contended for,—whether in a physiological, pathological, or therapeutical sense. And now let the reader compare the foregoing and former extracts, pp. 24, 25, 28, with the extract which forms the important part of Dr. Paine's premises, Vol. I, p. 22, as derived from the review of Dr. Carpenter's work, and he will find an exact correspondence: whilst the author's object was to deduce from them the conclusion that life does not consist in *the functions*, but that by Dr. Carpenter's own showing, the *functions* depend upon the "*vital properties*;" and, as Dr. Paine says, that,—"These 'vital properties,' therefore, which have been so much condemned when spoken of under the name of 'vital principle,' or 'organic force,' are exactly *our* vital properties, as they were, also, those of Hunter and Bichat."—This is all the contradiction or "want of consistency" which the author imputed to Dr. Carpenter, and it will have been seen, in the course of this reply, how much farther the author is sustained.

The next "accusation" imputed to the author is equally without a shadow of foundation. Thus:—

"Neither Dr. Carpenter nor ourselves ever advocated the doctrine that ORGANIZATION could be the result of any chemical or physical laws. On the contrary, Dr. Carpenter most distinctly repudiates any such idea, and shows that these laws can only operate in the preparation of the ORGANIZABLE MATERIALS, which, *until organized, do not exhibit vital properties.*" (Review, p. 388.)

As the author has affirmed, the foregoing is an absolute misrepresentation of what is said in the "Commentaries" in relation to Dr. Carpenter and his reviewer. It is a mere pretence. Just the *contrary*, indeed, was the object of the author, who endeavoured to show that the premises of both lead directly to an *opposite* conclusion; and, these premises were quoted by the author for the purpose of substantiating, by their authority, his own doctrine of vitality. (1)

(1) The phrase "organized chemistry," vol. i, p. 27, line 23, is clearly a typographical error for *organic* chemistry. The first is absolute nonsense.

But, we will now have from the reviewer of the "Commentaries" a brief quotation, in which is set forth, very summarily, the radical tenets of the physical school ; from which, also, the reader will be able to comprehend how far the reviewer and his associates do "advocate the doctrine that *organization* is the result of chemical or physical laws." Thus :—

"The doctrine which Dr. Carpenter has propounded respecting *vital properties*, and which is essentially the same as that upheld by Dr. Pritchard, Dr. Fletcher, Mr. Robertson, and other able writers on the same side, may be concisely stated as follows :— Certain forms of matter, (especially oxygen, hydrogen, carbon, and nitrogen,) are endowed with properties which *do not manifest themselves* either in these elements when uncombined, or in those combinations of them *which the chemist effects by ordinary means*. But they do manifest themselves when they are united into those peculiar compounds which are known as *organic*, and *when* these compounds have been submitted to the process which is termed *organization*. It is possible that the *first* of these conditions may be initiated by the chemist, but the last can only be effected by a previously existing organism. We assert, then, that the very act of organization causes the materials acted on to exhibit properties quite distinct from those ordinarily termed physical and chemical, which properties cannot be caused to manifest themselves in any other way than by the series of operations just described. We cannot see in what points this doctrine is open to objection. No one can say that the properties *do not* exist in a DORMANT state because they do not manifest themselves to him." "We argue that they [the *vital properties*] were *as much present in the ELEMENTS as any of their other properties, which only exhibit themselves in certain conditions*." "How do we know that *magnetic properties* may be made to show themselves in iron, until we have placed the metal in the necessary relations with a magnet? How, THEN, can we expect to find *contractility* or *sensibility* in any combination of oxygen, hydrogen, carbon, and nitrogen, until it has been converted into an *organized TISSUE* [blood!] by a previously existing organism! [A very philosophical induction.] And have we any more right to say that 'vital properties,' or 'vital forces,' or a 'vital principle,' have been SUPERADDED in the last case, than to assert that '*magnetic properties*,' or '*magnetic forces*,' or a '*magnetic principle*,' have been *superadded* in the former one! A mode of expression which, if it is to mean anything like that which the words import, no enlightened physical philosopher would think himself justified in employing." (*Review*, pp. 389, 390.)

Now, in the first place, the author has proved the falsity of what is here again imputed to him as to the physical properties of matter ; but he has an argument to show that the *vital principle* was "*superadded*" to man and animals by the Creator, after He had completed their structure, since which, that principle has been perpetuated in connection with all organic beings. (*Comm.* vol. i, p. 86 — 106.) This was done by the author to show the distinct *nature* of the *vital principle*, and to contradistinguish it from all "physical forces," which, the author maintains, with greater consistency than the reviewer and Dr. Carpenter, were "created by the Almighty" cotemporaneously with the matter itself. (See *Reply*, p. 9—11.) As to the phrases "*magnetic properties*," and "*mag-*

netic forces," which, by marks of quotation, are imputed to the "Commentaries," they do not occur in the work; nor is there anything to lead to the conclusion that the author has any parallel between the import of *a* magnetic force (of which he supposes but *one*) and the "*forces*" or "*properties* of a vital principle." It is all deception and misrepresentation. (*See Comm.* vol. i, p. 45, where magnetism and vital powers are spoken of in connection.)

Here, as in nearly all the other criticisms and illustrations, the reviewer has apparently acted the verbal plagiarist upon Dr. Carpenter's work. Thus:—

"It cannot, then, be logically correct," says Dr. Carpenter, "to speak of vital properties as *SUPERADDED* to organized matter, although an apparent analogy has been drawn from physical science in support of the assumption." "If an analogy exist between the two processes (which can scarcely be denied), it leads us to the belief, that just as the *MAGNETIC POWERS* (!) ARE DEVELOPED IN IRON, when the metallic mass is placed in a condition to manifest them, so the very act of organization develops vital powers in the *TISSUES* which it constructs. FOR NO ONE CAN ASSERT that there does not exist in EVERY UNCOMBINED PARTICLE OF MATTER, which is capable of being assimilated, the ABILITY TO EXHIBIT VITAL ACTIONS, when placed in the requisite conditions." (1) (*Carp. Princip.* p. 137.)

Now, 1st. Is it to be allowed that they who deride the doctrine of *vitalism* "in one breath," because the vital principle, like the soul can be only proved by its *almost infinite* phenomena, shall, in the next, assume that *vital* properties exist in the very "*elements*" of matter, where, by their own admission, there is not a *single* phenomenon to sustain the assumption? Besides, what difference is there implied between these assumed *vital* properties as existing in the very "elements of matter," and the *vital principle*, except that the former "exist in a *dormant* state in the elements of matter," and when they become "developed" are ready to take upon themselves some unexplained office?

2d. What is the difference, as it respects "organization" between *that* result and "*organic* compounds"? Are they not one and the same in a vital sense? The chemist *cannot* "effect" the latter "by ordinary means," (p. 37) nor by *any means whatever*; and, the "possibility" which is implied by the reviewer is a mere subterfuge, and Dr. Carpenter shall soon admit it. The doctrine laid down by Müller upon this subject will not be opposed by the *chemical* physiologists,—especially as it *has not been invalidated*. The one or two supposed instances are purely hypothetical, and so allowed by Müller, whose fundamental position is, that,—

"In *mineral* substances the *elements* are *always* combined in a *binary* manner. They are *never* observed to combine three or four together, so as to form a compound in which each element

(1) If the inquisitive reader will compare this review with Dr. Carpenter's article on the "Nature and Causes of Vital Actions," (b. 1, c. 1.) he will find, throughout, a perfect parallel of statements, "ASSERTIONS," argument, illustration, and even of style and words.

is equally united with all the others. This, however, is *universally* the case in *organic* bodies. Oxygen, hydrogen, carbon, and nitrogen, the same elements which by *binary* combination formed *inorganic* substances, unite together, each with all the others, and form the *peculiar proximate* principles of *organic* beings. These compounds are termed ternary, or quaternary, according to the number of elements composing them." "Although they may be by analysis reduced to their ultimate elements, they cannot be regenerated by any chemical process." "*Another essential distinction* pointed out by Berzelius is, that in *organic* products the combining *proportions* of their elements do not observe a simple arithmetical ratio." (*Müller's Physiol.* pp. 3, 4, — 1838.) This is also the doctrine of the best professional chemists; though, like that at p. 33, it is fatal to all chemical views of life.

There is *no* distinction, therefore, in the *vital* nature of "organization" and "organic compounds." But, the reviewer and his school, according to the reviewer, maintain that "organic compounds" are the result of *chemical* laws. Therefore, they do maintain that "organization is the result of chemical or physical laws." Nevertheless, according to the reviewer, it is only after "*organic* compounds" are converted into what he assumes to be "organization," that the *vital* properties, which are said to be "dormant in the elements of matter," awaken into existence.

3d. Let us, however, have another mode of reaching the foregoing conclusion, that the gentlemen must maintain that "*organization* is the result of chemical or physical laws." The reviewer, in different parts of his article, refers to the nervous power, sensibility, sympathy, irritability, and contractility. Whether he, or the other "able writers on the same side," have any other *vital* properties they have never said. As the matter now stands, we have the *contractility* of hydrogen gas, — the *sensibility* of carbon, — the *sympathy* of quicksilver, — the *irritability* of potassium, — the *nervous power* of phosphorus, and so on; — but especially do all the foregoing vital properties *repose* in "oxygen, hydrogen, carbon, and nitrogen." In all this, as has been shown, Dr. Carpenter agrees. It is the opinion of the present writer, however, that neither the reviewer nor Dr. Carpenter will go so far as to awaken these "dormant vital properties," and assume that the elements unite into "*organic compounds*" in virtue of their "dormant" presence. But "organic compounds" are equivalent to "organization," from which it follows that organization can only result from the "chemical or physical laws."

Notwithstanding, however, the emphatic manner in which it is insisted that the vital properties exist in the *elements* of matter, this doctrine is wholly lost sight of at other times, when both the

reviewer and Dr. Carpenter agree with the vitalists that those properties are "*communicated*" by the living organism, and by that alone, — as appears abundantly from our extracts. Farther, also, they are said to *depend* upon vital action, and to be "*lost*" when that action ceases. (*Reply*, p. 28, &c.)

4th. Now let us have a series of quotations from Dr. Carpenter illustrative of his views of life, and of the question now before us. They all occur in three consecutive paragraphs, thus :

"It will be hereafter shown that the *absorption* of *nutritious* fluid is probably due to the *PHYSICAL* power of *ENDOSMOSE*; and the interchange of gaseous ingredients between the air and the blood in the act of respiration, to the transmitting power which all membranes possess. But, the *CONTINUANCE* of these, and of many more which might be named, is *PECULIARLY DEPENDENT* on the continuance of *OTHER VITAL* actions [*none* having been mentioned !], and can only be effected in *DEAD* matter by *PROCESSES* which *IMITATE* these"! "A continued absorption may be produced by a *physical* contrivance which *imitates* the effects of *vital* action; as in the *WICK* of a *LAMP*, which draws up oil to supply the *combustion* above, but will cease to do so when the *demand* no longer exists. *IN THE SAME MANNER*, the constant *aration* of the blood is dependent upon the continuance of the passage of the fluid *over the respiratory membrane*"!!

"There is another set of changes in which *vital* actions would seem yet more intimately concerned, but which still appear to be *IMMEDIATELY DEPENDENT UPON THE SAME LAWS* as those which *REGULATE INORGANIC MATTER*. [!] These consist in the production, from the alimentary materials, of *ORGANIC COMPOUNDS*, either such as gum, sugar, albumen, gelatine, &c. which are destined to be *STILL FURTHER ORGANIZED*. This process must not be confounded with that of *ORGANIZATION*, since it only prepares the materials upon which that is concerned." (*CARP. Princip.* p. 145. See *Comm.* vol. i, p. 27.)

Now, to understand any part of these conflicting statements, each clause must be taken as an independent whole. Let us, therefore, take the words, "immediately dependent upon the same laws as those which regulate inorganic matter." This gives us what is affirmed by the reviewer, (and what will soon be more direct) that Dr. Carpenter, like himself, supposes that "*organic compounds*" depend upon "*chemical laws*." And yet, in the next following paragraph the whole of this is exploded in the following manner :—

"We cannot yet succeed in producing *artificially* any *organic compound*, even of the simplest kind, by directly combining its elements, [mark this] *BECAUSE WE CANNOT BRING THEM TOGETHER IN THEIR REQUISITE STATES AND PROPORTIONS*; but, there is no reasonable ground for doubt that *IF THE ELEMENTS COULD BE SO BROUGHT TOGETHER BY THE HAND OF MAN, the result would be the SAME* as the *NATURAL* compound, [!] for the *AGENCY OF VITALITY*, as Dr. Prout justly remarks, does not change the *PROPERTIES* of the elements, but simply *COMBINES THEM IN MODES WHICH WE CANNOT IMITATE*"!! (*CARP. Princip.* p. 146, See *Reply* pp. 17, 35, note 2, 38, and *Comm.* vol. ii, p. 117, note.)

"*Vitality*," then, "*combines the elements*"! Put this with *Reply*, pp. 33, 39.

5th. But we have, in the review of the "*Commentaries*," what is equivalent to a distinct affirmation that *organization* is the result of chemical agencies, thus :

1. "We shall rest upon the fact, now fully established [!] that, by influences acting on *chemical* principles, one organic product 'not an organized tissue' may be converted into another, as distinctly indicating that the *elements of all these products are held together* by no other than *CHEMICAL* affinities." (*Review*, p. 389.)

Now observe the contradiction in the next sentence.

2. "Certain forms of matter, (especially oxygen, hydrogen, carbon, and nitrogen,) are endowed with [vital] properties, which do not manifest themselves either in these elements when uncombined, or in those combinations of them which the *chemist* effects by ordinary means." (*Review*, p. 389.)

Now the *whole inorganic kingdom* and the *chemist* are concerned about the same laws in effecting the combinations of elements. By what laws, then, are those combinations formed which the chemist and inorganic kingdom cannot effect? Certainly not the *chemical*, and therefore the reviewer contradicts himself in saying that "the *elements* of all these (*organic*) products are *held together* by no other than *chemical* affinities," since they must be "held together," (at least under ordinary circumstances,) by the affinities through which they were *united*.

Where then, was the use of swelling the "great book" by introducing Dr. Fletcher's, and Dr. Prichard's, views of vitalism, of whose partial exclusion the reviewer complains; especially since the "doctrine propounded by Dr. Carpenter respecting the vital properties is essentially *the same*" as theirs, and "the other able writers on the same side," — whilst Dr. Carpenter gave us, also, the latest revision of the "doctrine?"

Observe, also, the subterfuge in the first of the foregoing extracts, by which the reviewer would have us understand that he means that "organization," or a manifestation of vital properties, consists in "an organized tissue." But, let us settle this construction against him by his own words. Thus: —

"In regard to the main question, we may briefly state our opinion; — that the *vital* properties of the BLOOD, — for with such we have formerly *shown it to be ENDOWED*, — are, like its physical properties, CAPABLE OF ALTERATION." (*Review*, p. 393.)

"It is almost impossible to consider it, without admitting that the LIQUOR SANGUINIS IS AS COMPLETELY POSSESSED OF VITALITY AS ANY SOLID TISSUE OF THE BODY." (*CARP. Princip.* p. 287.)

Let us now show farther that Dr. Carpenter agrees fully with the reviewer in the conflicting doctrines announced in the foregoing consecutive sentences marked 1 and 2, — the coincidence reaching even to the words. Thus: —

1. "Reasons have been already given for the belief, that the AFFINITIES which HOLD TOGETHER the elements of ORGANIZED TISSUES, are the SAME AS THOSE which prevail in the INORGANIC world." "Every fresh discovery tends to show that the POWERS IMMEDIATELY CONCERNED, are, like the elements on which they act, THE SAME IN ALL CASES." (*CARP. Princip.* p. 146)

That there should be no doubt about this chemical tenet, Dr. Carpenter has it twice over within six pages; and we shall repeat it on account of another explicit declaration to the same effect which accompanies it. Thus: —

"Reason has been already given for the belief that the AFFINITIES which HOLD TOGETHER the elementary particles of ORGANIZED STRUCTURES, are not different from THOSE concerned in the INORGANIC world; and it has been shown that the tendency to DECOMPOSITION AFTER DEATH bears a VERY CLOSE RELATION with the ACTIVITY OF THE CHANGES which take place in the part DURING LIFE."!!! (*CARP. Princip.* p. 140.)

2. "For no one can ASSERT that there does not exist in EVERY UNCOMBINED PARTICLE of matter which is capable of being assimilated, the ABILITY TO EXHIBIT vital actions, when placed in the REQUISITE CONDITIONS." [Compare this with the requisition of the reviewer, pp. 21, 37.] Again, "There is another set of changes in which VITAL ACTIONS would seem yet more intimately concerned, but which still appear to be IMMEDIATELY DEPENDENT upon the SAME LAWS AS THOSE which regulate INORGANIC matter (!) These consist in the production, from alimentary materials, of ORGANIC COMPOUNDS, either such as gum, sugar, albumen, gelatine, etc., which are destined to be STILL FURTHER organized, or such as urea, etc. This process must not be confounded with that of ORGANIZATION, since it only *prepares* the materials upon which that is concerned." (*CARP. Princip.* pp. 138, 145.)

The author has also other objects in bringing the two foregoing statements into juxtaposition; and first, to indicate the contradiction between what is said of "organized tissues" in No. 1, and of "organization" in No. 2. — Secondly, to show that Dr. Carpenter does affirm in the most direct manner that even "organized tissues" are "the result of chemical or physical laws." (*Reply*, p. 36.) This appears from No. 1. since, if "the affinities of the inorganic world (chemical affinities) hold together the elements of organized tissues," those elements must, of course, have been *united* "together" by the same "affinities." But, what follows in No. 1, from Dr. Carpenter, about "decomposition," &c., is fully conclusive. Nevertheless, we will show, once more, how the spirit of self-contradiction prevails, and how completely the gentlemen acknowledge the existence of "*organization*" of the alimentary matter *as soon as it enters the lacteals*. First, the reviewer, and next, Dr. Carpenter:—

"The ORGANIZATION and consequent VITALIZATION of this substance (albumen) COMMENCES *as soon as*, being taken INTO THE VESSELS, it is admitted into the living system, to which, so long as it remains in the stomach, it is really *external*." (*Review*, p. 397.)

"With the process of ABSORPTION, strictly so called, the ORGANIZATION of the constituents of the alimentary fluid, and their ENDOWMENT with VITAL PROPERTIES [yet existing in the very *elements* of matter, *Reply* pp. 37, 38, 39,] may be regarded as COMMENCING in animals as well as in plants." (*CARP. Princip.* p. 206.) — Q. E. D.

And yet, are we gravely told by these writers, that "organization" means "organized tissues," and that it "must not be confounded with organic compounds."

In immediate connection with the foregoing subject we have from the reviewer the following very apposite remark:—

"Now we hold that upon the Newtonian axiom so universally admitted, which forbids the construction of unnecessary hypotheses, it is the part of the philosopher to refuse his assent to any new doctrine of VITAL AFFINITIES, or of the subversion of chemical affinities by *vitality* or any other equally vague speculation." (*Review*, p. 388.)

And so, Dr. Carpenter:—

"It is a rule in all philosophical speculations not to frame any hypotheses which are unnecessary to account for phenomena." "The chief ground for the assumption of a distinct set of VITAL AFFINITIES, as they have been termed, appears to be," &c. (*CARP. Princip.* pp. 146, 147.)

And so, the "Commentaries":—

"Is there any philosophy," says the Commentaries, "in the unmeaning multiplication of causes [alluding to chemical agencies] especially when the superadded ones will not explain a single phenomenon, or a single result, appertaining to living organized matter." (*Comm.* vol. i, p. 99.)

The author has also quoted in his "Commentaries" the foregoing apothegm from Newton; and, in opposition to the intermingling of the chemical and vital forces for the purpose of expounding the phenomena of organic beings. The spirit of the apo-

thegm is predominant in the Essays on the "Vital Powers," "Animal Heat," "Digestion," and the "Humoral Pathology," and, what is not a little remarkable, the author, for this very reason, is denounced by his reviewer as being exclusive in not mixing up the chemico-physical and vital doctrines of life, and cultivating the no less grotesque inconsistency of a combined pathology of the humoralists and solidists. (Pp. 381, 392, etc.) How far, also, the reviewer himself has observed the foregoing principle, the reader requires no farther illustration.

But the main object of the writer in introducing the above extract, is to call the attention of the reader to that part of it which imputes to the "Commentaries" the doctrine of a "subversion of *chemical* affinities by *vitality*." This, in common with all other vitalists, the author holds to be true only in respect to the vegetable kingdom. Vegetables subsist on inorganic, animals on organic matter. This is fundamental in the "Commentaries." (See particularly, vol. ii, pp. 121—122, 201.) Nor has the author one *novel* idea as to the doctrine of "vital affinities."

6th. It need not be said that the foregoing chemical doctrine of "organization" is the foundation of spontaneous generation, and of that atheistical creed which are considered in the "Commentaries" (vol. ii, p. 123—140.) The reviewer will now comprehend *one* of the reasons, which he professes not to understand, that prompted the author to embrace in his work the "Appendix on Spontaneous Generation." The author will also give the reviewer the benefit of repeating his (the reviewer's) doctrine upon this subject. Thus:—

"But, we may take this opportunity of stating that our belief in the general proposition, that 'plants or animals of a *high degree of organization* are capable of producing from various parts of their tissues beings corresponding to those of the *inferior orders* of their kingdoms,' has recently been much strengthened by additional evidence." (*Review*, p. 398.) What is the evidence?—See *Comm.* Vol. II, p. 130.

Dr. Carpenter is of the same opinion. Thus:—

"It appears very difficult, and indeed almost impossible, without some admission of this kind, to account for the production of PARASITIC plants and ANIMALS in the INTERIOR of OTHERS. That their GERMS have been conveyed FROM WITHOUT into the situations where they are developed, must be held as a VERY FORCED SUPPOSITION," etc. (*Carp. Princip.* p. 395.)

Suppose it so;—is not the organization of the "parasite" as absolutely *specific* as that of the more complex animal,—it may be beast, it may be man? Where, then, must this doctrine conduct our philosophers? *Professions*, in such a case, are nothing; and they are nothing when *God* is confounded with *nature*. (See *Reply*, p. 10.) We must look at the inevitable consequence of the PRINCIPLE; whilst Dr. Carpenter and the reviewer have also laid the broad foundation, that all the "vital properties" there are, exist in the "elements of matter," (*Reply*, p. 37—38), and

the former goes so far as to say that — “*we may believe that there exists IN ALL MATTER A TENDENCY TO BECOME ORGANIZED,*” (*Carp. Princip.* p. 394.) and that the *ELEMENTS may be organized “by the hand of man”!* (*Reply*, p. 40.) Compare with Tiedemann’s doctrine in *Comm.* vol. II, p. 124. There is no difference in principle, however the reviewer and Dr. C. may not subscribe to absolute “spontaneous generation;” and the latter says of the hypothesis “that an elephant, or an oak, (and why not a man?) might be produced by spontaneous or accidental combination of its elements,” — that “such a doctrine it is *impossible* to refute, *otherwise than by an appeal to facts.*” (*Carp. Princip.* p. 394.) Setting *Revelation* aside as worthless, in the paramount matters of science, may we not bring to bear upon such a question the evidences of the *highest order of Design* which are manifested by the organization of “an elephant or oak,” by the final cause of vegetable in its relation to animal life, by the adaptations of each to air, and to various physical conditions of the globe; aye, and by the *instinct* of animals, and *reason* of man, etc.? Such a refutation may not be satisfactory to all; but is it not to him who measures Design by the scale of reason?

We next come to the Essay on the Philosophy of Bloodletting, p. 390—392. The reviewer has no other criticism than an admission of his inability to understand what bloodletting has to do with the “vital properties.” This is the more remarkable, since the reviewer himself starts with “vital properties” in the very “elements of matter.” But, with all this “transcendentalism,” his “vital properties” are the merest *necessity*—conceded, either to secure a toleration of the real chemical and physical doctrines, or to render the discussion intelligible. (*Comm.* vol. i. p. 48.) As we have seen, (*Reply*, pp. 24, 35—36,) the “vital properties” are declared to *depend* on the *functions* and *actions*, and that “the *elements of organized tissues are held together by the same affinities* as prevail in the *inorganic* world.” Whatever the contradiction, therefore, these “vital properties” have, *de facto*, no agency in organic beings, and can only be brought forward for the foregoing reasons. The author has endeavoured to illustrate this principle in his Essay on the “Vital Powers,” and again Vol. II, page 12, etc.

The loss of blood, therefore, with the reviewer, operates directly upon the flesh and bones, by emptying their contents,—just as it would if drawn out of a well contrived machine of leather tubes, with an injection-pipe to maintain a circulation. In referring to the author’s proposition that the “*direct* impression of loss of blood is upon the *vital properties* of the solids,” among other derisions of this doctrine we have the following:—

"Let those esteem it as such who think it of any use to them." "Are we one whit the wiser after all this learned discussion than we were before?" (*Review*, p. 391.)

But, what do the reviewer, and his school, give us in exchange? Is there any thing remarkably luminous in the *mechanical rationale*? The author cannot comprehend how loss of blood should produce its remarkable results but through the direct agency of the vital properties. He also differs from the reviewer in supposing that the organic system is neither a physical nor a chemical apparatus; but composed of elements in such proportions and modes of combination, and such arrangement of these combinations into tissues, which nothing can effect in the world of dead matter. He supposes this to be done through the agency of a real substantial vital principle unknown to the inorganic world; and, he supposes, like all others who make any absolute distinction between a dead and living being, that "material causes can as well operate upon such a principle as upon the mind; for come we must to the latter conclusion before we can reach the soul." (*Comm.* vol. i, p. 84.) He also believes that all vital agents, natural, morbid, or remedial, exert their primary effect upon that principle, or "*vital properties* if it be preferred"; and that, when disease takes place it is in consequence of some modification, generally in kind, of those properties, whilst a corresponding change follows in the functions; and, agreeing thus with Bichat, he has also adopted his language in saying, "that every curative method should have for its *object* the *restoration* of the *altered vital powers* to their natural *type*." (1) It can scarcely be supposed that the reviewer was ignorant that these are the doctrines of Hunter and Bichat; and yet, for some unaccountable reason he has given to the author of the *Commentaries* the credit of originality, — probably with a view of carrying out more effectually his imputation of speculative opinions. What is peculiar to the author is the application of the principle to the philosophy of bloodletting.

But since the reviewer is so much in accordance with Dr. Carpenter's positions, let us have his authority:—

"The *POWERS* which *MOVE* the blood," says Dr. Carpenter, "may *ALTOGETHER* result from *VITAL* operations; yet the *MOTION* itself is strictly conformable to physical laws." (*CARP. Princip.* p. 133.)

This is exactly the doctrine of the "*Commentaries*." The "*motion*" of the blood is purely mechanical; the rest is "*altogether vital*." But, through what principle is it, but the acknowledged "*vital powers*" that the heart suddenly ceases its action, or nearly so, when syncope follows the loss of six ounces of blood, or

(1) Bichat's *General Anatomy applied to Physiol. and Medicine*, Vol. I, p. 17.

from the sight of the lancet, unless it be that the loss of blood and the nervous influence operate directly upon the “vital powers” of the heart, by which, it is admitted, the “motion” of the blood is produced? Or is the effect exerted upon the flesh itself? Can you recall the action, should it happen to cease entirely? Why does a drop of prussic acid kill, when whey nourishes? But after all, the reviewer here, also, contradicts himself, and quite agrees with his author; for in speaking of the effects of “unwholesome food,” “wretchedness of mind,” etc., upon the poor of Europe, he says that these causes “combine to depress the vital powers of those immediately affected.” (*Review*, p. 392.) Of course, then, their action is exerted upon the “vital powers.” The reader will perceive, also, that we have here an admission that the “vital powers” of the *solids* are capable of direct “alteration,” as we have already seen of the *blood*. (*Reply*, p. 41.) Nay more; we have also shown that the reviewer “stimulates” the very properties of inorganic matter, and thus makes them the “creators” of those “powers” and “forces” which, he says, were “created” by the Almighty, — and in this, as has also most amply appeared, Dr. Carpenter agrees. (*Reply*, pp. 9—11, 47.) But, as this subject should not be passed lightly over in its connection with the author’s doctrine of the physiological effects of loss of blood, he will add a few more extracts from Dr. Carpenter’s work, as to the direct action of causes or agents upon the vital properties. We have already seen that Dr. Carpenter and the reviewer affirm that the “properties” of matter, organic and inorganic, *do* and *do not* carry on its changes, “actions,” “results;” that is to say, — the “properties” are the causes of the “actions,” and the “actions” are the causes of the “properties;” and this, especially, as it regards organic beings. (*Reply*, p. 9—10, etc.) We will now first have an extract corroborative of foregoing ones as to the dependence of the actions, results, etc. upon the “properties.” Thus, in deriding the doctrine of the vitalists, Dr. C. holds the following language:—

“Should we not consider it degrading to the dignity of Infinite Wisdom to suppose that at the creation of each world, He had FOUND IT NECESSARY to delegate to a SUBORDINATE the control over its working, — instead of at once impressing upon its elements those simple PROPERTIES, from WHOSE MUTUAL ACTIONS, foreseen and provided for in the laws according to which THEY OPERATE, all the varieties of change which it was His intention to produce, should NECESSARILY result?” (CARP. *Princip.* p. 132. — (See *Reply*, p. 10; and *Comm.* vol. i, pp. 10, 25.)

Here, then, we have another of those affirmations in which *every thing* is made to devolve upon the “properties” of matter, and by which the author is farther sustained in his argument with Dr. Carpenter, and in which he drew from Dr. C. though in opposition to Dr. C. himself, the conclusion that life is essentially constituted by the “vital properties,” and not by the “functions.” (See *Comm.* vol. i, p. 22—28.)

Having now *once more* got the *vital properties* as the real agents, and causes of all vital actions, let us see again, how far Dr. Carpenter will sustain the author as to the capability of those agents being *acted upon*. This we find in the third sentence from the foregoing extract. Thus:—

“For, if we come to inquire into the FUNCTION of any single organ, or, in other words, into the nature of the changes produced by it, we find that IT MAY BE REFERRED TO THE PROPERTY of the structure, manifested or CALLED INTO ACTION by a STIMULUS of some kind, to which it is EXPRESSLY FITTED TO RESPOND. THIS is evidently the case even in the INORGANIC world!” (CARP. *Princip.* p. 132.)

Now, as to the *organic* world, the most exclusive vitalists never went farther than Dr. Carpenter does in the foregoing extract; and, in respect to the “inorganic,” no vitalist, (certainly not the author, *Reply*, p. 18—19,) ever supposed that the properties of dead matter could be “*stimulated*” like the vital properties. It will be seen, also, that the author has here had it conceded to him, by one of the most uncompromising adversaries of “vitalism,” more than he requires to sustain his fundamental doctrine as to the physiological effects of the loss of blood, and of all remedial agents, as well as his corresponding induction that the passions, and the nervous influence, produce their direct impression upon the vital properties. And, just so we have seen of the reviewer. Take the affirmative side from either, and they go even beyond the author in what the reviewer denominates “transcendental vitalism.” We wish to make this subject very clear, and to show that Dr. Carpenter has as much upon *one side* as on the *other*. Thus:—

“The very STIMULI,” he says, “which would operate in EXCITING the VITAL PROPERTIES, as long as the organism retains them, have the effect of facilitating its decay when death has taken place.” (CARP. *Princip.* p. 143.)

Precisely what is involved in the author’s *definition of life*. (See *Reply*, pp. 8, 20, &c.) And how exactly conformable, also, to the author’s doctrine is the following:—

“Every tissue possesses VITAL PROPERTIES PECULIARLY ITS OWN, BESIDES that which has been spoken of as common to all; and EACH PROPERTY of each organ has STIMULI APPROPRIATE to itself.” (CARP. *Princip.* p. 143.)

In coincidence with the author, Dr. Carpenter’s “BOND OF UNION,” (*Reply*, pp. 28, 31—32,) is the foregoing “common” principle, which is equivalent to the author’s “vital principle;” and Dr. Carpenter’s “vital properties,” which appertain to the “common” principle in this instance, but held distinct at another time, (*Reply*, pp. 28, 31—32,) are the author’s “elements or endowments of the vital principle.” (*Reply*, pp. 18, 29—30.) Again:—

“Observation of these ACTIONS leads us to arrange them, as has been already stated, into certain groups termed FUNCTIONS: and analysis of the functional changes exhibited by living beings, *terminates* in REFERRING THEM ALL to certain PROPERTIES possessed by their component structures; which properties stand in the same relation to ORGANIZED TISSUES, as do those of *gravitation, electricity, &c.* to matter in general.” “They are CALLED INTO ACTION by STIMULI of various kinds, ADAPTED TO EXCITE each of them to ITS OWN PECULIAR OPERATIONS.” (CARP. *Princip.* p. 134.)

And yet again :

"Their suspension [*vital actions*] may result from the want of the STIMULI which are NECESSARY to EXCITE the DORMANT properties to EXERCISE." (CARP. *Princip.* p. 140.) Real, EXERCISING, agents.

But once more, by way of "illustration :"—

"Besides the vital stimuli, the influence of which is *necessary* for the EXCITEMENT and RENOVATION of the PROPERTIES of living beings, there are others which may produce an influence of a different kind, by calling into play the *animal functions*." "The mode in which they produce their effects is, however, so *analogous* to that in which VITAL STIMULI OPERATE, that from their evident (because only OCCASIONAL) action, a good ILLUSTRATION may be drawn of the more constant (and therefore less observed) influence of the latter. Thus, a *pinch of snuff* applied to the membrane lining the nostrils, *immediately excites an increase in its secretions*," &c. (CARP. *Princip.* p. 150.)

And now a remark from the review, which also goes to confirm the accuracy of the author's induction, that however his opponents may hypothetically assign organic processes to the forces of dead matter, the moment they are crowded in discussion, or begin to reason from the phenomena of nature, they suffer the whole work to devolve upon a *vital principle*.

"Whatever difference of opinion," says the reviewer, "there may be as to those changes of composition which are concerned in the formation of *organizable materials* and the *products of secretion*, [see *Reply*, p. 38—42,] there is NONE WHATEVER as to the fact of these materials, WHEN ORGANIZED, being ENDOWED [yet *existing in the ELEMENTS* of matter, pp. 37, 38,] with PROPERTIES ENTIRELY DISTINCT from any which CAN BE TRACED in *inorganic matter*"! — (*Rev.* p. 389. See *Reply*, pp. 11—12, 24—25, 28—41.)

Apply the foregoing, and what has been formerly shown, (*Reply*, pp. 24, &c.) to the author's doctrine of the physiological effects of loss of blood, and of other remedial, and morbidic, agents, and there is not the slightest discrepancy. The only difference is, the author adheres uniformly to the principle, whilst Dr. Carpenter and the reviewer sometimes sustain it, and at other times declare it all nonsense. When Dr. Carpenter, however, comes to his chapter on "VITAL STIMULI," (p. 149—162,) he is pretty much a "vitalist" throughout, — and, how could he be otherwise, and be intelligible, on such a subject? (See *Comm.* vol. i, pp. 26, 48—49.)

An artful attempt is made by the reviewer to impress the reader with the belief that the author attributes to the vital properties a species of intelligence. Thus :

"The 'alarm felt by the extreme *vessels* and *capillaries*,' according to Dr. Paine, must be tolerably like the 'sense of danger' which Dr. Macartney attributes to them." (*Rev.* p. 391.)

This is the only instance in the "Commentaries" from which the foregoing construction could be extorted ; and the reviewer has seized upon it, notwithstanding his author has repeatedly and strongly objected to the doctrine of Van Helmont, of Stahl, and even of Hunter, which imputes more or less intelligence or instinct to the vital principle. (*Comm.* vol. i, pp. 11, 29, 92, 94;

vol. ii, pp. 169, 174.) The very obvious motive for employing the word "alarm," was to represent figuratively, and therefore more forcibly, the susceptibility of the extreme vessels to the loss of blood. The author will now do, what the reviewer has not done, refer the reader to the page of the work, Vol. I, p. 126, where he will readily see the nature of the injustice which is attempted by the reviewer. In immediate connection with this, also, the reviewer represents the philosophical part of the Essay on Blood-letting as being comprehended in *four* lines which he quotes from Dr. Macartney on Inflammation, — such being the general style of this review. In the first place, however, there is no parallel between the objects of the two writers, and Dr. Macartney's *four* lines relate merely to an *ultimate* effect of bloodletting in a particular disease. But the reader shall be the judge both of the reviewer's honesty and of the author's ground of complaint. The following are the lines, introduced by a coarse remark of which the author presents only the least exceptionable part: —

"Dr. Paine's general theory," says the reviewer, "may be concisely stated in the following proposition set forth by the latter, [Dr. Macartney.] 'The intention of drawing blood from the system is to produce that kind of impression which is followed by a weaker action of the heart, and a more contracted state of all the smaller arteries in the body, and by that means inflamed parts are included in the general condition which precludes the possibility of inflammation.'" (*Review*, p. 391.)

This is no more "Dr. Paine's general theory" than the most mechanical doctrine which he has endeavoured to controvert. It is the object of Dr Paine's Essay to treat of the *physiological* effects of loss of blood, and to *trace* them from their beginning to their consummation in syncope, — to consider them under *various pathological* conditions, — to indicate the *agency* of the *vital properties*, and how far the *nervous influence* is instrumental in the effects, — to show the *physiological distinctions* between *general bloodletting*, *cupping*, and *leeching*, — to *apply* all this, and much more, under a variety of *practical* aspects, &c.

The affirmation which follows next, that "Dr. Paine tells us that 'a victory is obtained over the disease,' (inflammation) even before the blood is expelled from the vessels," is neither quoted in the author's language, nor does it convey the author's obvious meaning. The reference being suppressed, the reader will find the remark at Vol. I, p. 127. The author may also say, that it is a doctrine of the "Commentaries," that art *never cures*. All that is accomplished by our remedial agents is to establish a change in the diseased properties of life which shall enable nature to take on her general tendency to a restorative process. Our remedies are to be regarded in the same relative sense, and as operating upon the

same principles, as morbid agents ; only, in the former instance, a morbid condition is substituted which is more favourable to the recuperative process of nature. Hence the importance of making, as speedily as we may, the right impression, — neither too much nor too little, (*tuto, cito, et jucunde*,) — and then fall back upon that system of *watching* which should mainly obtain in all the strictly self-limited diseases, unless complicated with inflammations of important organs. (See *Comm.* vol. i, p. 641—661 ; vol. ii, pp. 174, 664, 670, &c.)

The reviewer next adverts to the author's strictures upon Dr. Hall's unqualified rules in bloodletting, and observes that, — "*Dr. Hall is as ready as any one to admit that no principle of treatment is without its exceptions, and that this is the case with regard to the rules which he lays down.*" (*Rev.* p. 391.) But, this is only the reviewer's opinion ; but being so, is not the principle, in common justice, equally applicable to Dr. Paine ? Why, however, did not Dr. Hall state more of the important exceptions in respect to a remedy of so much moment ? This brings us to that most flagrant falsification, that the author of the "*Commentaries*" has not indicated the injurious effects which may result from bloodletting. But, let us hear the reviewer :—

"Believing," he says, "that, *whatever* may be Dr. Paine's qualifications *as a philosopher*, he is a man of CORRECT and EXTENSIVE observation, (on subjects, at least, on which his prejudices allow him to use his sight and his sense,) we can only justify the very free and ALL BUT UNIVERSAL recourse which he advises to the use of the lancet, by supposing that his countrymen, young and old, have much more stamina than the original stock, — beef-eating and plethoric as it has been usually accounted. (*Rev.* p. 391.)

It happens, however, that no little part of the "*Commentaries*" is especially concerned in illustrating the pernicious and destructive consequences which may ensue from loss of blood under many conditions of disease, whilst the author is simultaneously employed in attempting to point out *those* conditions, as well as the *physiological* nature of the injurious influences. The author, indeed, has devoted two long sections, (Vol. I, pp. 239—274, and 342—362,) to an exposition of its injurious effects by analyzing the principles of its operation in such instances. The author, also, more than once reminded the reader that :—

"In all our remarks upon the pathology and treatment of disease, we have reference to those *early stages* of its existence, when the powers and actions of life are fairly within the province of art." (*Comm.* vol. ii, p. 531. See, also, various precautionary and explanatory suggestions, vol. i, pp. 213—214, 222, 224, 192, 259, 306—308, 621, 149, 232, 216, 235—237, 273, 165, 185—209, 621, 646—661, 275—277, 152—155 ; Vol. II, pp. 273, 503—505, 527—536, 541, 742.)

It is, also, in inflammations, and in idiopathic fever complicated with local inflammations or congestions, alone, that the author has advised the remedy ; whilst, in a large class of affections which he excludes from those denominations, he holds that bloodletting is more or less injurious. Such is true of the simple *nervous*, as they are called, — of the various conditions of indigestion when not attended by inflammation, — of all the strictly self-limited diseases, as smallpox, measles, scarlatina, whooping-cough, mumps, &c., unless demanded by some supervening inflammation of internal organs, &c. What measure of indignation, therefore, may not the author mete out to one who thus, from page to page, from line to line, brandishes falsehood in the very face of fact ?

Then follows, in relation to the reviewer's most unfounded charge as to indiscriminate bloodletting, another ironical admission of its possible propriety among the author's countrymen :

"We are inclined to think," says the reviewer, "that he especially needs enlightenment as to the prevailing constitution of the poor of our large cities, where deficient and unwholesome food, &c. depravity and wretchedness of mind, and all the other evils of squalid poverty, which can scarcely exist in anything like the same extent or degree in any part of the United States, not only combine to *depress* the *vital powers* of those immediately affected, &c. (*Rev.* p. 392.)

The foregoing are exactly among the instances which the author has most carefully, and in various places, (see the foregoing references,) exempted from the general principles which he has set forth in relation to bloodletting. Nay more, the author has protested against taking such subjects for the purposes of any great pathological or therapeutical principles. (*Comm.* vol. i, p. 302—303, and the *Essay on the Writings of M. Louis.*) True, the author has objected to the "bark and wine" treatment, even of that denomination of patients, *as a general plan, in those diseases where the anti-phlogistic treatment would be required by better constitutions.* But, in all his disquisitions upon this question, the author, as he repeatedly avows, has a constant reference to "the early stages of disease." As to the imputed want of "enlightenment" about the poor of European cities, and of European practice, whether it have been made with justice, the reader will be able to decide by referring to Vol. I, p. 279—287, 290, 296—308, 312—330, 332—344 ; Vol. II, p. 667—676, 631—633, and *Essay on M. Louis' Writings.* The reviewer, therefore, leaves untouched the comments upon that stimulant treatment of fevers and inflammations among better classes of society which is not very uncommon in European cities, and of which the author was distinctly and mainly speaking, when urging the importance of bloodletting.

We have now reached the *Essay on the Humoral Pathology*,

(*Rev.* p. 392.) Here, as in all the Essays which immediately concern the vital powers, there is no common ground between the reviewer and his author. One is a *chemico-mechanical physiologist* and *humoralist*, the other a *vitalist* and *solidist*. Objections only of a general nature are made, the sum of which is embraced in the statement that this Essay is “a manifesto of 300 closely printed pages.” The reviewer sees a great deal of corrupted blood as the primary cause of disease, whilst his author maintains a primary derangement of the solids, and that the alterations of the blood are consecutive. The reviewer, however, has one remark in this place, (already quoted for another purpose, p. 41,) which induces the hope that he may yet give in his adhesion to *vitalism*. It is this:—

“In regard to the main question,” he says, “we may briefly state our opinion, — that the *vital properties* of the blood are, like its physical properties, *capable of ALTERATION* by various causes.” (*Rev.* p. 393.)

What, then, does the reviewer mean by this supposed “alteration of the vital properties”? Of course, exactly what he condemns in the vitalists. It is not the blood itself which is first altered, but its “*vital properties*.” Then they are *something* susceptible of “alteration.” But, in order to be “altered,” something must act upon those “vital properties of the blood.” And yet the reviewer professes not to comprehend this language when employed by the vitalists in relation even to the solids; nor do the latter allow that “the vital properties of the blood are altered” by any other “causes” than by the living solids upon which its formation and integrity depend. And, that such is truly the meaning of the reviewer, is amply attested by our quotations at pp. 10, 12, 31, 32, 46—48.

The author will now exhibit one of the minor instances of perversion. The reviewer quotes “three consecutive sentences,” which the author will present according to their arrangement in his work. Thus:—

“These considerations will show us that *the blood is neither a primary cause of disease in the solids, in virtue of its own morbid condition, nor can it be an aggravating cause of disease when altered in its character by the morbid action of the solids.*

“None will deny what is affirmed by M. Andral, that every morbid change in the action of the solids is probably followed by a change in the blood; whilst we fully agree with him, that any *primary* alteration of the blood, of a morbid nature, must, with greater certainty, produce disease of the solids. The latter proposition is the basis of humoralism.” (*Ital.* as in *Comm.* vol. i, p. 646.—*Rev.* p. 392.)

The reviewer then assumes that the author’s proposition in the

first "sentence" is "contradictory" of what he makes a third "consecutive sentence," beginning with the word "whilst;"—the first proposition being an induction from the author's premises, the last from those of the humoralists, which had been stated at great length. But, the reviewer suppresses the next following sentences, which would have cleared up the "difficulty" which he had created. Thus:—

"There is a *specious* parallelism about the foregoing propositions of which humoralism has taken no little advantage. It supposes that the blood and the solids sustain, reciprocally, the same relation to each other; when, in truth, the distinction is about as great as between an agent and the object acted upon. There is this difference, however. In the present case, in their natural state, the blood is the object, whilst it contributes to the support of the agent; but WERE the blood to become *primarily* diseased, it would *then assume the same relation* to the solids as *any other morbid cause*, and even more so on account of the foregoing principle, or in other words, its constituting the *pabulum vitæ*." (*Comm.* vol. i, p. 646.)

The main object of the Essay is to show that the blood is never *primarily* diseased, in the *humoral sense*; but, to prevent all misapprehension, the author carefully contradistinguished those natural changes of the blood which arise from deficient or other imperfect *nutriment*, (though not as a *primary* cause of disease in the solids, *Comm.* vol. i, pp. 609 — 626, 691 — 698,) and endeavoured to show, at no little extent, that the *ordinary morbid* agents can have no *primary* effect upon the blood. And, although the reviewer was quoting, in the present instance, from what he found an unanswerable argument to the foregoing effect, and professes to have read the Essay with "the best attention," he goes on to remark immediately after the quotation just made, that, —

"The first of these sentences appears to us so far contradictory of the third, that we can only get out of the difficulty by supposing it to be our author's meaning that no *primary morbid alteration* can take place in the blood, — an opinion so completely opposed to all that sound physiology and pathology teach us, that *we scarcely venture to attribute it to him*." (*Rev.* p. 392.)

What is the object of the reviewer's doubt as conveyed in the last words of the foregoing quotation? Does not the reviewer clearly endeavour to imply, that the author *has not* investigated the question, when it is the main object of the Essay to prove two propositions, — namely, that if "a *primary* disease of the blood" *produce disease* of the solids, there can be no recovery; and, secondly, therefore, in all curable diseases the morbid condition must begin in the solids; otherwise, the blood being naturally *dependent* on the solids, but now becoming more and more diseased, and, therefore, *more morbid*, would acquire an *irretrievable ascenden-*

cy over the solids. “*Nothing* can make *healthy* blood, but a *healthy action* of the solids.” (*Comm.* vol. i, p. 611.)

The researches and doctrines of Haller, Prochaska, Whytt, Philip, Reid, Hall, Müller, and Valentin, as to the “*vis insita*” or *organic force*, and the “*vis nervea*” with its wonderful attributes, being fully before the world, the author has little apprehension for the fate of his Essays where vitalism and solidism are concerned; nor for his principal doctrine that all organic processes are dependent on the organic force, and are only influenced incidentally by the nervous power.

Take also the following from the review of Dr. Prout’s recent edition of his work on the “Nature and Treatment of Stomach and Urinary Diseases, 1840,” contained in the *present number* of the British Review; and let the author of the “Commentaries” ask whether the spirit of the remarks does not sustain the whole foundation of his Essays relative to vitalism and solidism? Thus:—

“Our general estimate of Dr. Prout’s treatise may be gathered from the analysis just concluded, and the strictures scattered through it. We acknowledge and have pride in bearing testimony to the high qualifications of our countryman in the branch of PATHOLOGICAL INQUIRY BASED UPON CHEMICAL FACTS. We recognise the comprehensive sagacity of his speculations, and have respect for the patient zeal with which he has toiled TO ERECT UPON THESE A STABLE SYSTEM. But we fear the time for SUCH SYSTEMATIZING has not yet come; and, although all *speculations* on the subject are SEDUCTIVE in themselves, and doubly so when emanating from an individual of Dr. Prout’s eminent skill in the department of chemical physiology, it *cannot*, we think, *be denied*, that in the existing *unformed* and *vacillating state* of ORGANIC CHEMISTRY, (*Reply*, pp. 38—39, 40,) THEY SIN ESSENTIALLY in being established on A MOST UNSOUND BASIS. Nor can we avoid entertaining some *solicitude as to the results of their propagation, which to us appears likely to betray minds of INFERIOR ORDER into mere extravagances*. For these, however, Dr. Prout is not *fairly answerable*; and SHOULD his doctrines—when the FRAIL EMBRYO science on which they are *based* has reached healthy maturity—be recognised as true, he must almost TAKE RANK with those highest intelligences, whose energy has OUTRUN the scientific apprehension of their times. But, meanwhile, Dr. Prout has *neither* done his doctrine, himself, nor his readers justice, in not explicitly stating the FOUNDATION for and manner of verifying (so far as he is acquainted with these himself) his PRESUMED results. THE DAY HAS PASSED NEVER TO RETURN, WHEN THE AUTHORITY OF NAME COULD AT WILL SUPPLY THE PLACE OF DEMONSTRATION. Should

Dr. Prout intend favouring the public with further volumes, he would do well to ponder on these admirable remarks of a natural philosopher, of an eminence not inferior to his own: — ‘It is not sufficient to say that we have *seen* such a thing. It is saying nothing, if, at the same time, we do not indicate *how* we have seen it; if we do not give our readers the opportunity of judging of the *manner* in which the facts which we record have been observed.’” (‘*Brit. and For. Med. Rev.* April, 1841, p. 363. — See *Reply*, p. 4.)

May it not also be, that an observation of the principle enjoined in the last clause of the foregoing quotation is greatly at the foundation of the other reviewer’s complaint against a “great book?” And, what a contrast between the courtesy, the honesty, the doc-

(1) We have had exemplifications from Dr. Carpenter of the influence of the chemical and physical hypotheses of life upon the philosophy of vital actions; and in the “Commentaries” they are sufficiently numerous from Dr. Prout, Müller, and other chemical physiologists. Let us now place in apposition a few extracts from Liebig’s latest work, who, like Prout and Müller, has his controlling “vital principle,” and like them justly enjoys “a European reputation.” (See *Rev.* p. 436.)

“It is impossible,” says Liebig, “to mistake the *modus operandi* of putrefied sausages, or muscle, urine, cheese, cerebral substance, and other matters, in a state of putrefaction.” “It is obvious that they COMMUNICATE THEIR OWN STATE OF PUTREFACTION TO THE SOUND BLOOD, from which they were produced, EXACTLY IN THE SAME MANNER AS GLUTEN in a state of decay or putrefaction CAUSES A SIMILAR TRANSFORMATION IN A SOLUTION OF SUGAR.”!

“THE MODE OF ACTION of a MORBID VIRUS exhibits such a STRONG SIMILARITY TO THE ACTION OF YEAST upon liquids containing sugar and gluten, that the two processes have been long since COMPARED to one another, although merely for the purpose of illustration. [They have often been represented as *identical*.] But, WHEN THE PHENOMENA attending the action of each respectively are considered MORE CLOSELY, it will IN REALITY be seen that their influence DEPENDS UPON THE SAME CAUSE.” “Ordinary yeast, and the virus of human smallpox, effect a violent tumultuous transformation, the former in vegetable juices, the latter in blood.”! “The action of the virus of cow-pox is analogous to that of the low yeast.[!] It communicates *its own state of decomposition* to A MATTER in the blood, and from a SECOND MATTER is itself regenerated.”! “THE SUSCEPTIBILITY of infection by the virus of human smallpox MUST CEASE after vaccination, FOR THE SUBSTANCE to the presence of which this susceptibility is owing HAS BEEN REMOVED from the body by a peculiar process of DECOMPOSITION artificially excited.”! “COLD MEAT is always in a state of decomposition; it is possible that THIS STATE may be communicated to THE SYSTEM of a feeble individual, and may be one of the SOURCES OF CONSUMPTION.”!

“Analogy, that fertile source of error, has unfortunately led to the very UNAPT COMPARISON of the VITAL functions of plants with those of animals.”! “A COTTON WICK, INCLOSED IN A LAMP, which contains a liquid saturated with carbonic acid, ACTS EXACTLY IN THE SAME MANNER AS A LIVING PLANT in the night.[!] Water and carbonic acid are sucked up by capillary attraction, and both EVAPORATE from the exterior part of the wick.”! “ALL SUBSTANCES in solution in a soil are absorbed by the ROOTS of plants, EXACTLY AS A SPONGE imbibes a liquid, and ALL that it contains WITHOUT SELECTION.”! (*Liebig’s Organic Chemistry, applied to Agriculture and Physiology*, pp. 26, 33, 92, 349, 350, 370, 372, 373.)

Compare the last with quotations from Liebig at p. 16. There is much in

trines, the mind, of the reviewers of Dr. Prout and of Dr. Paine, and in articles which stand side by side !

As appropriate to the present subject, the author will now transcribe, in a *note*, from a lecture by Professor *John P. Harrison*, M.D., of the Cincinnati Medical College, (and which has this day, for the first time, fallen into his hands,) one of those luminous passages which unfolds that deep thought and research which the present writer has stated in his "Commentaries" as characterizing his brethren of the West, where nature is studied in her simplicity, and where so much evidence has been given, that the practice of medicine is pursued with as sound a reference to correct pathology as in any other part of the world. ⁽¹⁾

Liebig of the foregoing nature ; and, as to the humoral pathology, he goes far beyond the ancient excesses. (See *Comm.* vol. i, p. 417 — 420.) Nevertheless, what has been now quoted is a fair exemplification of the fruitful results of chemistry and physics in their relation to the "present state of medical science." The philosophy of Liebig as to vegetable functions is literally carried out by Dr. Carpenter (*Reply*, p. 40) and by Müller (*Comm.* vol. i, p. 565, 683 — 689) to the animal kingdom. The *agricultural* part of Liebig's work, however, so far surpasses anything hitherto given to the public, we would not have quoted his *physiology* and *pathology*, had it not been for the sake of our cause, and for many passages like the following :—

"*Animal and vegetable physiologists*," he says, "institute experiments without being acquainted with the circumstances necessary for the continuance of life,—with the qualities and proper nutriment of the *animal* or plant on which they operate, (*Comm.* vol. i, p. 697 — 698,) or with the nature and chemical constitution of its organs. These experiments are considered by THEM as convincing proofs, whilst they are fitted only to AWAKEN PITY." (*Liebig*, ut cit. p. 42.)

Finally, "We see, therefore, that this MYSTERIOUS (VITAL) PRINCIPLE has many relations in common with CHEMICAL FORCES, and that the latter can indeed REPLACE IT"! (*Liebig*, p. 58.)

But, Liebig's "*vital principle*" is as much an "*entity*" as the author's, and his "*chemical forces*" must, according to the foregoing, be equally so as his *vital principle*, and, therefore, far exceeding the author's construction. (See *Reply*, pp. 16 — 17, 9, 13 — 14, 18 — 20, 26, 28, 30, 33, 37.)

(1) "FALSE THEORY. — It is a well established fact, that some of the most erroneous theories in medicine have originated from men, who professed to despise theory. And those men who are most addicted to expressions of contempt against reasoning in medicine, are the most disposed to indulge in crude speculation. And the cause of this is obvious. It springs from too exclusive reliance on their own individual experience, apart and independent of that accumulated wisdom of ages to be found in books. 'To think is to theorize,' is a proposition not to be successfully controverted. So deep in man's intellectual nature is laid that disposition to account for phenomena, on which all philosophy is built, that he cannot be induced to forego the gratification it affords, under any condition of his being. The employment of reducing truth to its element, is one of the most gratifying and useful occupations of the mind.

"The luxuriant growth of our science, from the multitude of facts which have been collected by its assiduous cultivators, demands that comprehensive and accurate principles should be deduced from its many and insulated particulars. It is the object of correct theory to reduce the multifarious appearances of disease to simplicity and order.

The reviewer, farther on, recurs to the Essay on the Humoral Pathology; — not satisfied with the representation he had made of that Essay in its appropriate place. We have, therefore, the farther misstatement, that, —

“According to our author, although blood may be altered from its healthy condition, IT NEVER CAN BE, STRICTLY SPEAKING, DISEASED; that is, it must always bear a *constant* relation to the solid tissues. This he endeavours to establish in his Essay on Humoral Pathology; to which it seems to us quite sufficient to reply that, in all cases of *local* disease, the blood must bear a *different* relation to the healthy and diseased solids respectively.” (*Rev.* p. 398.)

In the present state of our science, there is an imperative necessity for the exercise of an inquisitive and powerful reason, to remodel and arrange the facts that are already ascertained, and to trace up the analogies, which run through diseases, to some general principles. Thus we shall be enabled to make a discriminating survey of the miscellaneous variety of particulars which are placed beneath our observation. To frame a correct theory, we must keep in mind the remark of a distinguished medical teacher, — ‘*Medicina neque agit in cadaver, neque repugnante natura aliquid proficit,*’ — that medicine will neither act on a dead body, nor will it act on a living body in a way contrary to the laws of the animal organization. It is from an utter forgetfulness, or contempt, of this essential principle, that the science has been infested by so many chemical and mechanical theories. The humoral pathology rested on a fallacious and shallow conception of the laws of life. The nervous system was [and is] overlooked, its structure disregarded, and its laws unobserved.”

“What has humoralism ever done for medicine? It has retarded its march, it has shut up the avenues to its successful cultivation, and deteriorated the genuine spirit of correct investigation.”

“The doctrine of the corruption of the blood in diseased states of the economy is amenable to one unanswerable objection; — this corruption has never been demonstrated. It is surely not logical to contend for the possibility of a thing which has never been proven, [or shown to be possible.] We are not, as medical philosophers, to establish any of our views of morbid action on mere possible contingences.” — “This concession of Cullen bears Sir Gilbert Blane out in the declaration that — ‘*the whole of the humoral pathology rested on a fallacious, and shallow, though specious foundation.*’”

“Andral candidly avers — ‘that, in the present state of the science, it is the part of a sensible man not to adopt the doctrine of humoralism too lightly, by judging from facts, many of which require re-examination before they are finally admitted, and that we ought to be particularly on our guard against being in too great a hurry to make practical applications of it.’ (*Anat.* vol. i, p. 419. See *Comm.* vol. i, p. 627 — 641.)

“A doctrine so mysterious and impracticable, which must be thus guarded, limited, and dreaded, lest we rashly employ it for any useful practical purpose, cannot, surely, derive its existence from correct and enlightened experience; and, therefore, if we desire to see the reign of a just philosophy extending its healthful protection over the science of medicine, we should renounce a scheme of explanation of disease, which is not founded on sound observation, and which exerts such dubious, if not dangerous, tendencies over the practice of our art.”

“Dr. Armstrong’s popular doctrine of congestion is founded on wrong views of anatomy and physiology, and is therefore untenable. Indeed, at page 288 of his work on Typhus, under the head of common continued fever, we have an admission that congestion and inflammation are the same.”

“The Broussaian pathology of fever is amenable to a just objection on account of its generality.” “Such pathological views involve no laborious process of thought, and demand no extensive examination. They are light and portable, easily transferred from the author’s page to the reader’s comprehension. The memory alone is exercised in their reception.” (*Prof. Harrison’s Lectures*, p. 39 — 49: 1835.)

It is a doctrine, however, of constant recurrence in the *Essay on the Humoral Pathology*, that the blood is *always absolutely* more or less *diseased* when the solids are affected, whether generally, or *locally* if to much extent. Thus :

"The solids, which give being and vitality to the blood, become, in their normal state, it is said, the subject of its morbid action ; and, according to the PREMISES of humoralists and SOLIDISTS, *when the solids are diseased the BLOOD UNDERGOES DISEASE in consequence* ; and, since, [according to the humoralists] the blood was *originally* the cause of the morbid action of the solids, *every increasing degree of disease, according to the admitted premises, must be a cause of increasing disease in the solids.* This must be equally true of LOCAL as of constitutional diseases. No portion of the blood can be, long, morbidly affected more than the whole mass ; and since, when universally diseased, it should produce one universal disease of the solids, it is manifest, from the constant occurrence of *local* affections, that humoralism is striving against the plainest evidence." (*Comm.* vol. i, p. 647. *Reply*, p. 52.)

Again the Commentaries :—"We shall notice here an affirmation by M. Andral, since it is regarded by high authorities as nearly closing the door against farther discussion. 'Physiology,' he says, 'leads us to the conclusion that every alteration of the solids must be succeeded by an alteration of the blood, just as every modification of the blood must be succeeded by a modification of the solids. Viewed in this light, there is no longer any meaning in the disputes between the solidists and the humoralists.'"

"This is any thing but a fair statement of the great question at issue. It is not whether the blood becomes DISEASED by a morbid action of the solids ; and the solidist is surprised that the defence of humoralism should often turn upon laboured attempts to prove WHAT EVERY BODY ADMITS. (*Reply*, p. 52—53.) Nor is it, whether vitiated blood, or putrid matter, will excite disease when injected into the veins. The question at issue is *whether foreign morbid causes, and remedial agents, in their ordinary modes of operation, produce their primary effect upon the solids or upon the blood, and the latter become the cause of disease in the former ; whether we 'have hereditary humours, as gout, scrofula, etc.'* and *whether we are 'the parents of our own humours, and that we breed bad humours ;'* whether they 'gravitate to the legs,' or are 'brought to a part by poultices ;' whether, according to Andral, 'those derangements of functions and organs produced by the experimenter, when he introduces different deleterious substances into the blood, are *likewise those* that are produced by the sting or the bite of certain animals, and are also *those* that take place in smallpox, measles, and scarlatina, and are the *same* derangements that appear in persons exposed to putrid emanations, vegetable or animal, and to miasmata from the bodies of other persons that are themselves diseased and crowded in confined places, the *same* which show themselves in individuals whose blood

is only imperfectly or badly repaired by *insufficient* or *unwholesome diet* ;' whether, in other diseases, 'where *no deleterious substance* has been introduced into the blood, and in which there is no direct proof that any alteration of that fluid has been the primary cause of the morbid phenomena,' but where the symptoms and morbid appearances may have some resemblance to those of the foregoing affections, 'it appears, as in the preceding cases, the *primary* cause of disease should be referred to the blood,' and whether 'the whole blood must be altered or corrected' by 'incisives, diluents, attenuants, inviscants, incrassants, revulsives, repellents, concoctants, deflectants, derivatives, depuratives, deobstruants, detergents, agglutinants, incarnatives, refrigerants,' etc.? These are the questions."

"But the most objectionable part of M. Andral's statement, by which he calmly identifies solidism and humoralism, is the assumption that the blood is admitted by the solidists to be 'modified' without the agency of the solids, and to become, in consequence, the cause of disease in the latter ; or, in the words of our author, 'just as every modification of the blood must be succeeded by a modification of the solids.' We shall not dwell upon this *coup de main*," etc. (*Comm.* vol. i, p. 636—637.)

The author often dwells upon the necessity of a more or less "*diseased*" state of the blood in every diseased condition of the solids, and perfectly concurs with M. Andral, and twice adopts his language, that,

"No one solid can undergo the SLIGHTEST modification, without producing *some derangement* in the NATURE or quantity of the materials destined to form the blood, or to be separated from it." (*Comm.* vol. i, p. 630.)

As to the last clause in the quotation from the review, the author has much to say as to the state of the blood in "*local diseases*," though it is manifestly the purpose of the reviewer to give the impression that his author had overlooked the considerations relative to that question. Take, as an example, the following passage :—

"If we suppose, that in any serious LOCAL inflammation the blood becomes more or less altered, according to the foregoing principles, is it asked why the universal mass, being thus modified, is not detrimental to other parts? It is an obvious answer, that all other parts are now modified in their powers and functions by the sympathetic influences of the local affection. In proportion as that affection is capable of modifying the blood, so does it exert its sympathetic influence over all parts of the organization. 'Confluxio una, conspiratio una, consentientia omnia. Juxta totius quidem corporis naturam omnia ; juxta partem vero partes in unaquaque parte ad opus.' (1) The modifications of the blood, and the constitutional derangement, being produced by a common cause, the blood

(1) Hippocrates, de Aliment. vet. 45.

and the solids are universally adapted to each other. It matters not, therefore, how 'black,' 'woolly,' or dissolved, the blood may become in 'scurvy,' and 'putrid' fevers; and that such patients ever recover is especially owing to the absence of healthy, stimulating blood."

"Nature has endowed the living organization with numerous resources for its protection; some of which may be habitually dormant, but are called into action by many accidental causes that would constantly endanger life without them." (*Comm.* vol. i, p. 655.)

The Essay on the Humoral Pathology being falsified in less than a page, we come next to that upon Animal Heat, to which about four pages are devoted. The principal theoretical disagreement between the reviewer and the author consists in the former attributing the development of heat from the blood to "chemical changes," whilst the latter ascribes it to a *vital* process.

It is astonishing that a contributor to the British and Foreign Medical Review should not be aware that Hunter, Bichat, and other eminent vitalists, consider the elaboration of heat from the blood a process analogous to "secretion." But here again he gives to his author the credit of the discovery. Bichat is so emphatic upon the subject that he says, (what is worth quoting for other purposes,) that,

"It seems to me, that the explanation which exhibits nature always pursuing an uniform course in her operations, drawing the same results from the same principles, has a greater degree of probability than that which shows her separating, as it were, this phenomenon from all the others, in the way which she produces it." "The extrication of caloric is a phenomenon *exactly* analogous to those of which the general capillary system is the seat." "When we place upon one side all the phenomena of animal heat, and on the other the *chemical hypothesis*, it appears to me so inadequate to their explanation, that I think every methodical mind can refute it without my assistance." (*Bichat, ut cit.* vol. ii, p. 46; and *Reply*, p. 18.)

It is well known, also, to most people, that Hunter maintained that — "the power of generating heat in animals is that power which preserves and regulates the internal machine." (*Hunter's Observations on the Animal Economy*, p. 91. 1786.)

The reviewer supposes that there can be

"No essential difference between Dr. Paine's hypothesis and that of Dr. Crawford; since this pre-existing heat [put into the blood by the reviewer] exactly corresponds with the *latent caloric* of the chemist, which only requires certain *chemical* changes to render it sensible." (*Rev.* p. 394.)

The author will make no comments upon this perverted representation of his doctrine; but will ask the reviewer to define the

nature of heat, and his views as to its origin? The *laws* of inorganic and animal heat are pretty well ascertained; and will the reviewer explain the *cause* of their difference? So great a philosopher as *Moore* remarks, that,

"We must allow the bodies of living animals and vegetables to form an *original cause* of heat, as much beyond our power of explaining as the source of the sun's heat." (*Moore's Medical Sketches.*)

There is one remark, contrasting the doctrine of the reviewer and the author, of which the former shall have the benefit in his own language, — a fairness in which the author takes much pleasure, though a very rare opportunity conceded to the author. Thus:

"In Dr. Paine's opinion, then, as in ours, the *acknowledged influence of the nervous system upon the production* of animal heat is exercised through the medium of the organic functions; and the difference between us consists in this, that *he* regards it as one of those functions incapable of being explained by any other than *vital laws*, — which, in the present state of our knowledge of *those laws*, is *equivalent* to saying that we know NOTHING AT ALL ABOUT IT; whilst *we* consider it as a *result* of those functions produced by the MOLECULAR CHANGES which they involve, — *these changes* being themselves governed by the ORDINARY LAWS OF CHEMISTRY." (*Rev.* p. 396.)

From the coincidences hitherto indicated between the doctrines and language of the reviewer and Dr. Carpenter, the inquisitive reader may be interested with knowing that the same parallel exists between the reviewer's remarks on animal heat and those of Dr. Carpenter's "*Principles*," &c. p. 377—378.

The reviewer is peculiarly intent upon the doctrine of respiration, and complains that his author did not add to the *bulk of his work* by noticing, more fully, Newport's observations as to the respiration of insects. But, the main object of the Essay is to disprove that doctrine, and the author only felt it necessary in respect to the experiments upon insects, to refer ACCURATELY to the fact that Newport had *connected* their *generation of heat* with the process of *respiration*; which he did in the following manner: —

"He (Newport) also found that the power of generating heat is exalted during their breeding season; though it might have been more difficult to ascertain that the amount of heat evolved is IN PROPORTION TO THE QUANTITY OF AIR RESPIRED." (*Comm.* vol. ii, p. 66.)

Now observe the *characteristic* statement of the reviewer: —

"A stimulus, which excites the individual [an insect] to activity, also increases the number of its respirations and its consumption of oxygen; and the temperature is raised, as Mr. Newport has shown, [?] EXACTLY IN THE SAME PROPORTION. Now, in *alluding* to Newport's experiments, Dr. Paine ENTIRELY OVERLOOKS THIS FACT"! (*Rev.* p. 395.)

Our conscientious and verbal critic, —

"Will not impute the mistake of calling the separation of the oxygen of the atmosphere from the nitrogen *mixed* with it an act of *decomposition* to Dr. Paine's ignorance of the meaning of chemical terms." (*Rev.* p. 393.)

Nor, on the other hand, will Dr. P. impute to the reviewer an "ignorance" of the fact of its being still *sub judice* whether the oxygen and nitrogen are simply *mixed* or *chemically combined*. Nearly a page is devoted to showing that the author's experiments upon the temperature of trees are not as minutely "recorded" as John Hunter's. The material objection is that the temperature of the earth was not ascertained sufficiently low down. The experiments, however, as it regards the purpose of the author, are in no respect invalidated. The temperature of the earth was ascertained as low as the roots of the smaller trees extended, and as theirs was almost always the highest temperature, and as those whose roots reached lowest down had the lowest temperature, the necessity of going deeper with the thermometer, so far as respected the principles the author attempted to illustrate, was superseded. All the experiments, too, at each observation, were regulated by common standards, and the detail, therefore, required by the reviewer would have unnecessarily increased his objection to a "great book."

Page 397 is devoted to a *denial* of any organization or vitalization of the food until it is "taken into the vessels."

"The ORGANIZATION and consequent VITALIZATION of this substance COMMENCES AS SOON AS, being taken into the VESSELS, it is admitted into the living system." (*Rev.* p. 397.)

And so Dr. Carpenter : —

"With the process of ABSORPTION, strictly so called, the ORGANIZATION of the constituents of the alimentary fluid, and their ENDOWMENT with VITAL PROPERTIES may be regarded as COMMENCING in animals as well as in plants." (*CARP. Princip.* p. 206.)

And yet these *identical* writers "ASSERT," that the very "ELEMENTS of matter are ENDOWED with *vital properties*." (See *Reply*, p. 37—38.) Which way shall we have it?

Even so great a defender of the *chemical digestion* of food as Dr. Prout fully admits an organizing and vitalizing agency of the stomach ;⁽¹⁾ for which he gets a reprimand in another article in the present number of the British Review, (p. 445,) whilst in yet another article, it is said that, in a later work,⁽²⁾—"Dr. Prout maintains that the stomach possesses a *vitalizing* and *organizing* faculty, whereby it is enabled to fit the crude aliment for contact with the living structure." (*Rev. of Prout*, p. 332.) Where does that "*vitalizing* and *organizing* faculty" reside? Is it certain that the stomach, or the vessels, can *vitalize* any better than the gastric juice, which

(1) Prout's Chemistry, Meteorology, and the Function of Digestion, considered with Reference to Natural Theology, b. 3, c. 3. (2) On the Stomach and Urinary Diseases, 1840.

is especially secreted for the purpose? But, Dr. Prout, along with Liebig, and even Müller,⁽¹⁾ are marked for the sacrifice by philosophers who complain most loudly of "transcendental vitalism;" though their chemical and physical theories of life are duly recognised as "conformable to the present advanced state of knowledge."⁽²⁾ But, take the following passage from *Liebig* as one of those scintillations which illuminate and betray the errors of a master-mind.

"The individual organs," he says, "such as the STOMACH, cause all the organic substances conveyed to them which are capable of transformation to assume new forms. The STOMACH COMPELS THE ELEMENTS of these substances to unite into a compound *fitted for the formation* of the blood. [Can artificial '*pepsin*' do as much?] But the *blood* possesses *no power of causing transformations*. On the contrary, its principal character consists in its readily suffering transformations; and no other matter can be compared in this respect with it." (*Liebig's Organic Chemistry applied to Physiology, &c.* p. 346.)

The chemical hypothesis of digestion is *affirmed* by the reviewer; but there is no attempt to show its validity, or to indicate an error in the author, except to class him with the "transcendental vitalists." The artificial mixtures of "Müller, Schwann, Eberle," are duly approved; as they are also by Dr. Carpenter. Thus the latter:—

"SIMILAR effects [to those of the gastric juice] have been obtained by an *artificial GASTRIC JUICE*![] which has been formed, by Muller and Schwann, of a mixture of dilute *acetic or muriatic acid*, with *mucus* of the stomach; the simplest way of MANUFACTURING it being," &c. (*CARP. Princip.* p. 208.)

The author's doctrine is presented after the usual manner of the reviewer, where "vitalism" is concerned. He represents the author as "mixing up the vital properties with the gastric juice," in the way in which we have just seen them "mixed up" by those erudite *chemists*, Prout and Liebig, and forgetting that he and Dr. Carpenter had just "mixed up" the same properties with the chyle and blood, whilst Dr. Carpenter also endows the *fluid ovum* with *such* vital properties as are capable of unfolding, and without chemical agencies, all the essential parts of the fœtus. (See *Reply*, pp. 32—33, 40.)

"We have next," says the Journal, "a learned review of the Theories of Inflammation," (p. 398.) The only apparent objection to this Essay is the author's doctrine that this "disorder con-

(1) See CONDEMNATION of Muller's "*nital principle or organic force*," in *British and Foreign Med. Rev.*, Jan. 1839, p. 172. The second English edition, however, of Muller's *Physiology* is said to be expurgated. See *Ibid.* January, 1840, p. 244.

(2) "The British Association for the Advancement of Science," 1838, deputed a committee of those eminent chemists, Thomson, Prout, and Graham, with whom Prof. Owen was also associated, to make experiments upon the gastric juice of Alexis St. Martin. Now, we respectfully submit whether the foregoing inquiry does not fall under the province of the physiologist? (See *Reply*, p. 54. Extract from Review.)

sists in disorder of the vital forces;" (*Reviewer's phraseology*.)—a rather lame objection for one who defends the humoral pathology by affirming that "the *vital* properties of the blood are capable of *alteration* by various causes." And this leads the author to say that he is greatly misapprehended by the reviewer in supposing that the change of those properties in inflammation consists alone in their "*exaltation*." The author supposes them, also, to be otherwise "altered," just as his reviewer so correctly supposes of the "vital properties of the blood," when that fluid is diseased. There is no other attempt to invalidate this Essay.

As the review naturally divides itself into two parts, so also should the examination. That portion which has been the subject of analysis is without a clause to mitigate its rank injustice. But, continued misrepresentation would have been exuberant when it ceased to be useful; and few are so obtuse as to carry it beyond the limit of satiety. The reviewer, therefore, having thus disposed of vitalism and solidism, appears to have abruptly concluded, on reaching the other Essays, that it might be as well to have some reference to a sense of ordinary justice and decorum. What remains to be said, therefore, is defensive only in a passive sense. Folly and Ignorance are not the usual companions of "much power of mind," "great learning," "zeal, and industry," which the author concedes are verbally admitted far beyond his desert by the reviewer; nor could they achieve what the subsequent Essays are allowed to embrace, without leaving a trace of their counter-influence upon that equal bulk of the work, in which the reviewer sees nothing to impugn but by misrepresentation.

"The next Essay, the Philosophy of Venous Congestion, is, we think," says the reviewer, "altogether the most valuable in the work." He also thinks "that the author is quite right in *asserting* [showing] that, in many instances, the enlargement of the veins and the STAGNATION [?] of the blood in them cannot be accounted for on the ordinary theories, and that they are due to some change in the veins themselves. We are farther disposed to admit the probability that this change is of an inflammatory character." "Having established in his own opinion that 'venous congestion [true congestion] is in no respect mechanically determined by a remora of blood,' he proceeds to show, and we think with more success, that a mere passive relaxation of their parietes will not produce it, and that the cause is to be sought in some morbid condition of the trunks themselves. This he regards as of an inflammatory nature; producing varicose enlargements when local and chronic, and giving rise to congestive fevers, [not to the *fever*.] A considerable body of evidence, from symptoms, post-mortem appearances, and the effects of treatment, is brought forward in support of this view; and we are disposed to recommend it strongly to the attention of our readers." (*Review*, p. 398—399.)

Nevertheless, the acerbity of feeling is not yet assuaged. The

author has made no greater compromise with the mechanical hypotheses of venous congestion, than he had in his former Essays with the chemical and physical doctrines of organic processes. "*Excessive dogmatism and exclusiveness*," and other unseemly epithets, continue, therefore, to be favourite modes of representing the author; nor is there wanting that more *personal* offence, of which examples have already been presented in attempts to degrade the author by distorting his views in the language of insult.

A page (p. 399) is occupied with *entirely perverting* what the author has said in respect to the independence of true cerebral congestion, or even mechanical plethora of the cerebral veins, of *remora* of blood in pulmonary or other thoracic affections, unless, according to the author in obstructions of the jugular veins or vena cava. Compare that page with *Comm.* Vol. II, pp. 249, 252, 262, 482—483, 217 note ⁽³⁾ 427—428, 232, 248. And, notwithstanding the author has quoted the works of FIFTEEN writers to *prove a mechanical* injection of the veins of the brain, in cases of *man* "HANGING," (*Comm.* Vol. II, p. 255), and has much to the same effect, (pp. 252—254, 238—246), the reviewer charges him with ignorance upon this subject, after the following manner:—

"Surely *hanging*, whether judicial or suicidal, is not so rare an occurrence in America, that Dr. Paine has never witnessed its post-mortem phenomena." (*Review*, p. 399.)—[The reviewer *directly* and *utterly perverts* his author's whole demonstration and facts, as to the absence of cerebral derangement in NATURAL "obliterations of the cerebral veins and vena cava," by this *management*.]

The reviewer could also "give the Essay higher commendation, if it were compressed from *four hundred* pages to *forty*." (*Review*, p. 398.) But the author had embarked upon an unexplored region, and one, if he were right, of vast moment to mankind; he had prejudices and malevolence, like his reviewer's, to contend with as in all the other Essays: numerous difficulties were to be removed; artificial experiments to be exposed and divested of influence; the facts and opinions of great philosophers to be respectfully examined, etc. Various other specific questions, such as the pathology of varix, of venous hypertrophy, of purpura hemorrhagica, of the true asthma, of the cerebral congestions which spring from alcohol, the narcotic poisons, cold, etc.; the diversities and complications of active phlebitis; the radical distinction between inflammation and idiopathic fever, and the modifications of each by venous congestions, and how each disease is modified by various predisposing causes; the pathology of the true puerperal fever; the powers which govern the circulation (*venous* and *arterial*); and a variety of other topics indispensable to the great object of the Essay, are so considered as to form distinct disquisitions in themselves, whilst they are relatively intended for a consistent whole. May not the facts, also, which the au-

thor has accumulated here and in other places, be of some advantage independently of the principles they are designed to illustrate?

Events have only satisfied the author that he should not modify his plan; and, when another edition shall be published, instead of abstracting from the present, other materials will be added; and, that a proper issue may obtain between the reviewer Dr. Carpenter, and the author, the present examination will be incorporated with the work.

"The next Essay," says the reviewer, "on the Comparative Merits of the Hippocratic and Anatomical Schools, contains many sound remarks on the absurdity of the pretensions of the Modern French School of morbid anatomy, and the necessity of the observation of the phenomena of disease in the living state for the success of medical practice." (*Review*, p. 400.)

"The work concludes with a severe review of the writings of Louis, in which Dr. Paine points out certain alleged fallacies of his method of generalizing, and exposes his hasty condemnation of previous observers. It may be thought a little strange that *Dr. Paine should see these faults so glaringly in another, but should be so utterly unconscious of them in himself; but alas!! for human nature, such a self-delusion is by no means uncommon.*"

["Oh! that *thou* wouldst the giftie gie us
To see oursel's as ithers see us."]

"He seems to regard M. Louis' system of observation as not only useless, but strongly injurious; and he does not give him, by any means, sufficient credit for the mass of valuable materials which he has collected for the benefit of those who *can* use them aright." (*Review*, p. 401.)

The author has marked the characteristic sentence in the foregoing quotation for the purpose of comment. It embraces insinuations which are only worthy a mind that was capable of the injustice which has been hitherto exposed. Throughout the "Commentaries" the author has dwelt upon the importance of general principles in medicine, and the *whole object* of his work is to attempt a reduction of scattered facts to such principles. Nor has he been guilty of the alleged inconsistency of objecting to this practice in others; but, on the contrary, in numerous places has he urged its importance, and lamented its neglect. (See, particularly, *Appendix on Analogy and Principles in Medicine*, Vol. II, p. 574—589.) As it respects M. Louis, the object of the author was *totally different* from what is implied by the reviewer,—it being to exhibit a "glaring" inconsistency in M. Louis of condemning all "generalizing" by others, while he himself was addicted to the practice beyond all medical philosophers. As to the implied charge that the author has "hastily condemned previous observers," he can only make a positive denial, and, by associating this reply with the work itself, commit the issue to an impartial public. The author will here have one word as to his respect for the writings of Hippocrates, Aretæus, Celsus, and other fathers of medicine. His main object was to institute a contrast between

their habits of observing nature and the artificial systems of more recent times. Like all other sane men, he believes the human mind to be capable of progression in knowledge, but also believes that this progress may be impeded or arrested by false philosophy, if he may so call it. The author's sentiments upon this question are fully expressed in Vol. II, pp. 676—677, 806—815.

Finally, from what has been now seen, what must we conclude from the following, and other passages of a similar import, which occur in the review?—

“As on this subject we formerly expressed our *complete accordance* with Dr. Carpenter's positions, whilst differing from him on other points, we shall in our present observations *identify* our own with them, more especially as Dr. Paine's criticisms are directed to both alike.” (*Rev.* p. 387.)

Now, lest some subterfuge be concealed in the foregoing asseveration, will the reviewer of Dr. Paine's “Commentaries” distinctly avow that he also wrote the review of Dr. Carpenter's work? (1) Will the editor assume the responsibility? (2) But, however this

(1) The following is the title of the work to which the author refers:—

“PRINCIPLES OF GENERAL AND COMPARATIVE PHYSIOLOGY, BY WILLIAM B. CARPENTER, MEMBER OF THE ROYAL COLLEGE OF SURGEONS, LONDON; LATE PRESIDENT OF THE ROYAL MEDICAL AND ROYAL PHYSICAL SOCIETIES; AND FELLOW OF THE ROYAL BOTANICAL SOCIETY, EDINBURGH; AND LECTURER ON FORENSIC MEDICINE IN THE BRISTOL MEDICAL SCHOOL.—*London*, 1839.”

(2) If Dr. FORBES will compare the review of the *Character and Writings* of JOHN HUNTER, which appears in the April No. 1839, of the *British and Foreign Medical Review*, with the REV. DR. CHANNING's eloquent “*Remarks on the Character and Writings of JOHN MILTON*,” and then look at an Article in the April No. 1839, of the *Edinburgh Review*, upon Dr. Channing's “*Remarks*,” he will see the advantage of requiring initial signatures from the contributors to his Journal; whilst such articles as appear anonymously would be duly accredited to the Editor, and his correspondents thus protected. He need not go beyond pages 418, 419, 420, (a) 422, 423, of the *Medical Review* to appreciate the force of the foregoing suggestion. The author could assign not a few other *similar* reasons,—but this for the present.

Before the reader, however, shall have done with this inquiry, let him *critically compare* the following pages of the article in the *Medical Review*, with the following sections of DR. CARPENTER's “*Principles*,” etc.; namely, pages 426—427, 433, “The human body,” etc. with sections 512, 513, 514, 515, 5; and pages 430, 332, with section 364. See, also, Dr. Carpenter's “*Preface*,” p. 7—8.

The author has quoted his reviewer, (*Reply*, p. 41), as saying, that in another article HE had “formerly shown the blood to be endowed with vitality.” That article is in the July, (1839), number, and is a *continuation* of the *elaborated* review of the *Character and Writings of John Hunter*. (See *Review*, p. 177—183.) Here, also, compare Channing with page 183, &c. “What a world of thought,” etc., “we are naturally curious to know,” etc.

“His reviewer read for METAPHYSICS under the letter M, and for CHINA under the letter C; and combined his information, Sir.”—(*Pickwick Papers*.)

“We have been induced to make these GENERAL REMARKS to save us the necessity of EXTRACTING LARGELY from a work,” etc. (*Rev.* April, 1839, p. 422.)

(a) “The whole community is now turned into (MEDICAL) readers”! (*Channing and Reviewer*.) See other similar metamorphoses.

may be, there can be no doubt that the author of the "Medical and Physiological Commentaries" has met a proud adversary in ambush, and stamped him with indelible marks of *falsehood* and *prevarication*.

"The tune hath been when no harsh sound would fall
From lips that now may seem limited with gall."—*Byron*.

The author in submitting this "examination" to his professional brethren, regrets that his engagements have rendered it necessary to execute it with greater haste than he could have desired. He has now only to add, that he has endeavoured not to neglect any criticisms of the reviewer, and to omit nothing which was intended to operate disadvantageously to the "Commentaries." An apology is scarcely necessary for the Italics and Capitals which abound in the "examination," since, the reviewer's *criticisms* being of a *verbal* nature, it became necessary to indicate the perverted words, and their true import, by appropriate marks.

In having thus, for the second time, exposed the malevolence of those who have felt annoyed by the author's criticisms, and, as there are many others, particularly in Europe, from whom the author has had the misfortune to differ in opinion upon important doctrines, he feels entitled to an impartial consideration of any strictures upon his "Commentaries" which may appear hereafter; and, in the language of Dr. Carpenter's successful appeal, "he will only now express the hope that, as *his* inferences have not been formed hastily or inconsiderately, they may not be too readily pronounced crude or unphilosophical." (*CARP. Princip. Preface.*)

NEW-YORK, May 5th, 1841.

The introduction of the following extracts is in no respect intended either to sustain the foregoing defence, or to advance the interests of the "Commentaries." So far as the reviewer, Dr. Carpenter, and the author are relatively concerned, the latter desires that their respective merits should rest entirely upon their own ground. But, the author cannot forbear connecting with this pamphlet a memorial of the kindness which he has received from the medical press of his own country. It may be also as well to premise that the author is personally unacquainted with every editor of the American medical periodicals, excepting the gentlemen who conduct the "New-York Journal of Medicine and Surgery." To those who have done the author the honour of the following notices, (and

he believes that the writers are all, with the foregoing exceptions, personally unknown to him,) the author embraces this opportunity of conveying his profound gratitude. Perhaps, indeed, in making the foregoing "examination," he has been as much influenced by a sense of obligation to his unknown friends as by any other consideration.

"No further evidence than these volumes is necessary to show that Dr. Paine is a man of extensive and varied erudition, whose industry has never been surpassed in the annals of American medical science. It would seem at first view, that the man who had written these huge volumes, aside from the thousands of references to all authors of credence from a remote antiquity, minutely and accurately registered in the margin, could have done hardly anything else in the course of a long life. Notwithstanding the praise and respect due his high literary attainments, and his profundity in the circle of the sciences, we imagine Dr. Paine will be dealt with severely by the medical press of this and other countries. There are a score of sins and medical heresies to be detected by the right worshipful admirers of Louis, which will annoy him hereafter." — *Boston Medical and Surgical Journal*, July, 1840, p. 383.

"This work reached us so late as to afford time merely for a glance at its contents; but this superficial examination has most favourably impressed us in relation to the learning and industry of the author." "But it is not only for the learning it displays, that the production of Dr. Paine may be recommended. The language and style, as well as the skill and ingenuity with which he maintains his own opinions, and contests those of others, show him to be a scholar; &c." — *The American Journal of the Medical Sciences*, Phila., Vol. 26, 1840, p. 437.

"We have received this book of DR. PAINE with great pleasure. It has been long expected. The mechanical execution is beautiful, and the contents, as was to be expected from the well-known character of the author, are replete with value." — *The Maryland Medical and Surgical Journal*, Baltimore, July, 1840, p. 365.

"It may be said, that many of these subjects are not of a *practical* nature; and to those who regard the mere pouring of drugs, of which they know little, into a body of which they perhaps know less, this may be the fact. We trust, however, that at the present day there are few such. Some there are who doubt the utility of pathology, laugh at auscultation and percussion, and consider that no improvements have occurred in medicine of late years — because they have not instituted or are ignorant of them. Such persons, likewise, may regard the dissertations before us as of but little value; but to the large mass of physicians of the day, who are anxious to improve their profession in the only way in which it can be legitimately and signally improved — that is, by a proper attention to physiological, pathological, and therapeutical principles, we can recommend them as essays replete with information, the perusal of which cannot fail to expand the mind, and to lead to trains of thought pregnant with benefit to the professional reader himself, and through him to the community.

"On many of the subjects, our views are by no means in accordance with those of Dr. Paine, but his essays have not been the less welcome on that account. He is liberal, well read, argumentative, and candid; and his volumes exhibit, that his attention has not been directed merely to medical lore, but that his literary qualifications are ample also."

"Surely the intelligent author does not mean to convey the idea, that he is the first to treat of 'the philosophy of the operation of blood-letting.' We admit, that, *ex professo*, essays on the subject are rare; yet we had fancied, that we ourselves had added an humble contribution on this subject some years ago, and in a volume, which the

author has done us the honour to cite, but which, — as it respects this topic, — has not attracted his attention.” [Prof. Dunglison’s *General Therapeutics*, p. 396 to 428.]

“Certain of the author’s opinions we shall doubtless have occasion to advert to hereafter. In the meantime, we advise all to peruse the work for themselves, which contains a vast fund of information agreeably conveyed.” — *American Medical Intelligencer*, *Phila.*, July, 1840, p. 117.

“They are disquisitions on important questions in physiology, pathology, and therapeutics, with an amplification of argument, and variety and precision of bibliographical details, which, in this age of microscopical examination on the one side, and transcendental vagaries on the other, is truly instructive and refreshing. It is easier, by far, to praise and admire the laborious research of the author than to imitate him; but let not the inability to do the latter prevent the former, which Dr. Paine may rightfully claim as his due. If the ‘Commentaries’ afford, as they do, food for the ‘mind contemplative’ of the learned physician, they will also, and herein we would especially recommend them, habituate by their perusal the young student, and the yet imperfectly read practitioner, to inquiry and reasoning on the phenomena of life and the modifications to which they are continually subjected. Our recommendation of this work would be nearly as strong even if we differed from the author in some of his conclusions, as it would be if these were entirely in coincidence with our own opinions. We deem the perusal of his essays a healthy and strengthening exercise, in the taking of which, much good will be gained in the course of the journey over his pages, many new facts acquired, and pregnant hints offered, even though at the end, the traveller may not acquire possession of an El Dorado, or a mine with unalloyed gold.”

“We must rest content, for the present, with pressing them on the attention of that class of medical men who may be the least inclined to encounter a continuous perusal of the two large volumes of which the work consists. But they are not obliged or expected to read them through at once. Let them rather take up one of the important themes discussed and study it with care; and then after a due interval, we will not prescribe its duration, go on with another. Every hour honestly devoted to a study of the work will create, we are sure, fresh desire, and, what is more, will give increased ability for farther progress over its richly adorned pages.” — *Eclectic Journal of Medicine*, *Phila.*, August, 1840, p. 382.

“The features of the work before us are peculiar. Directing his attention almost exclusively to questions of physiology and medical philosophy, Dr. Paine has, throughout his several memoirs, endeavoured to show the direct application of his principles to the practice of the healing art. He has touched on almost every disputed or unsettled point in medical philosophy.”

“Every inquiry into the laws that regulate the actions of living bodies, he maintains must turn wholly upon the vital forces. And, says our author, ‘he who shall regard them as coincident with the powers that rule in the inorganic world, must, as appears to us, travel in a route upon which he will be forever losing his way.’

“How just is this remark when applied to what has of late years assumed so much importance, under the specious show of experimental philosophy!”

“They are, nevertheless, daily gaining ground; and the bold attempt to substitute mere physical forces for the vital power, in the study of organic actions, which has recently been made by the celebrated Magendie, in his lectures on the blood, is a sufficient evidence, that at the present moment, vital philosophy is in need of an advocate, able and willing to defend it. Such an advocate is our author.” —

“In conclusion, we would recommend the study of these volumes to the profession. Few medical men, even amongst our most learned and experienced, can peruse these essays without benefit, or without receiving information that may be of avail to them in future. We know of but few works, and certainly none in the range of American medical literature, to compare with this, for the extent and variety of professional research evinced in it.” — *New-York Journal of Medicine and Surgery*, July, 1840, p. 146 — 172.

"The review passed unavoidably into new hands." "The more we examine the work, the more are we astonished at the immense research it displays, the more we are pleased with the general fairness and candour of its statements. To this latter expression, however, we are compelled to state that there are some striking exceptions; a mistake into which Dr. Paine has unintentionally, no doubt, been led by his enthusiastic attachment to what he believes the true principles of medical philosophy. None among his warmest admirers are more convinced than ourselves of his ardent love of truth, or of his devotion to the improvement of medical science; the work before us is a stupendous proof of much more even than this, to those who read it with the attention it deserves."

"Equally obscure to our minds is the true pathology of venous congestion; yet the path is clear, and for this we are indebted to Dr. Paine. His investigations have thrown great doubt on pre-existing theories: they have called forth a new view of the whole question; the truth of which is not to be tested by empty speculations, but by careful examination and patient thought."

"That our author is perfectly sincere and honest in his condemnation of M. Louis, we have no doubt whatever; but we regret none the less the attempt he has made to crush one whose position is so firmly fixed in our medical literature. The numerous admirers of M. Louis cannot indeed fail to be shocked as well as surprised at the bold denunciations that are poured out against him. They have this consolation, however, that the thunder which rolls so loudly does not shatter, and that while a few may pause and wonder, none will be convinced. In making these remarks, we would not be guilty of undervaluing Dr. Paine's labours."

"Of this we feel well assured that those who differ from him the most, will find much to admire,—many rich sources of instruction by which they may profit and improve."
—*Ibid.* Oct. 1840, p. 403—432.

"The work, whose title is announced in the above heading, is one of the most remarkable contributions that has been made to the medical literature of our country.

"As an American production, not only is it unusual in its size and the abundance of its matter, it is still more unusual on account of the extent and elaborateness of research, especially in books, and of the great amount and diversity of learning, both ancient and modern, by which it is characterized; and, as respects the latter quality, we might safely add, *enriched*. Indeed in both qualities, if we mistake not, it may be pronounced *unique* in the medical annals of the United States. And in standing sufficiently correspondent to these are the magnitude, and bold ambitiousness of its aim and object, namely: *To expound, vindicate, and determine some of the fundamental principles, and most important doctrines in the philosophy of medicine.*"

"Those members of the profession, who are desirous of attaining a thorough and competent knowledge of the work we are examining, must peruse it themselves; and not merely peruse it, but make it a subject of laborious and accurate study. In no other way can their desire be gratified."

"Under this head, (Vital Powers,) Dr. Paine, like a warrior, confident alike of the rectitude of his cause and of his own powers to maintain it, promptly shows his colours, and heralds forth in no doubtful terms the principles for which he is resolved to make battle. And battle he does very strenuously make from the beginning to the end, not only of the present essay, but of his two elaborate and massy volumes. Every 'section,' and almost every page of the entire work, is, more or less, an arena of conflict. To vary our style, rendering it less warlike, and therefore more appropriate to our subject and purpose, Dr. Paine is a controversial writer; and though we do not, as will appear hereafter, concur with him on every subordinate point he discusses, we consider him, as relates to most, if not all, his fundamental principles and general doctrines, correct and triumphant. The reason of his triumph is plain. He contends for TRUTH, as it is clearly, we think, expressed in the Book of NATURE, is master of his own subject, and possesses ample means for its illustration and defence. He is, as will be presently perceived, a VITALIST and SOLIDIST. *And so, if we mistake not, is Nature herself.* His course, therefore, was straight and obvious."

"He has taken Nature for his guide, marked her footsteps, followed in her path, and faithfully employed, in vindication of sound principles in medicine, the all-sufficient means, with which she supplies her industrious votaries and enlightened advocates. And thus pursuing his purpose, with ability and perseverance, (and he is destitute of neither) his failure to accomplish it may be pronounced *impossible*. For the ultimate triumph of truth is as certain as any of the other Decrees of Heaven."

"We speak not here of the *positive* condition and character of the principles and laws that govern the world of living matter. Those great sources and regulators of action and change are, *in themselves and in their relations to one another*, as certain, harmonious, and stable, as are any of the other elements or attributes of creation. And creation, being the work of an ALL PERFECT BEING, is free itself from imperfection and fault. The irregularity and unstableness apparent in it, are *only* apparent. They exist only in relation to ourselves, on account of the insufficiency of our knowledge, and comprehension of them."

"Without gravely attempting, at present, to arbitrate between two writers, one of them so able and learned as the American, and the other so popular and fashionable as the Frenchman, we say unhesitatingly, that we have long witnessed, with dissatisfaction and regret, the dense and unmeasured clouds of professional incense, that have risen to the latter, from numerous altars in the United States."

"What, we ask, has Mr. Louis done, for the real advancement of practical medicine, that entitles him to such homage? and the only reply, which truth countenances, is **NOTHING!** In point of example, he is proverbially one of the most unsuccessful practitioners in the metropolis of France, and that is a high standard of comparison. For, in that metropolis, practical medicine, if reports and statistics on the subject be not deceptive, is in a miserable condition, — a condition lower than in perhaps any other large European city — and greatly below its standard condition in the towns and villages of the United States."

"M. Louis, though professing to be an unprejudiced observer and interrogator of nature, and proclaimed as such by his pupils and followers, is one of the most confirmed theorists, and exclusive dogmatists, that has appeared in medicine. In his condemnation of the opinions and proceedings of his predecessors and contemporaries, and in assuming that his own method of cultivating medicine *approaches* perfection, if it do not reach it, he is scarcely less sweeping and self-sufficient than Paracelsus. In his estimation, all, or most at least, that is professionally valuable, centres in himself, and is incorporated in his '*numerical method*' and his '*pathological discoveries*. According to his own estimate of matters, and that of his worshippers, he is the great medical Juggernaut of modern times, or of all times."

"We shall only add, under the present notice, an expression of our hope, that we shall find leisure hereafter to give such further analyses and expositions of Dr. Paine's '*Commentaries*' as may be more gratifying and useful to the readers and patrons of this Journal, and more worthy of a work so erudite and able, as that we have been considering."—*The Western Journal of Medicine and Surgery; Louisville, Ky. April, 1841, p. 257—270.*

THE MEDICO-CHIRURGICAL REVIEW,

April, 1841. London.

"A man who by long consideration has familiarized a subject to his own mind, carefully surveyed the series of his thoughts, and planned all the parts of his composition into a regular dependence on each other, will often start at the sinister interpretations, or absurd remarks of haste and ignorance, and wonder by what infatuation his critics have been led away from the obvious sense, and upon what peculiar principles of judgment they decide against him."

"Some seem always to read with the microscope of criticism, and employ their whole attention upon minute elegance, or faults scarcely visible to common observation."

"Others are furnished by criticism with a telescope. They see with great clearness whatever is too remote to be discovered by the rest of mankind; but are totally blind to all that lies immediately before them."

"When a book has been once dismissed into the world, and can be no more retouched, I know not whether firmness and spirit may not sometimes be of use to overpower arrogance and repel brutality. Softness, diffidence, and moderation, will often be mistaken for imbecility and dejection. They lure cowardice to the attack by the hopes of easy victory; and it will soon be found that he, whom every man thinks he can conquer, shall never be at peace." (JOHNSON'S *Rambler*.)

SINCE the foregoing was printed, the April No. of the Medico-Chirurgical Review has fallen under the observation of the author. It contains a review of the "Commentaries," (p. 392—402,) in which there is something to excite the author's thankfulness; but there are many misapprehensions of a serious nature, which the author will rectify. In doing this, he will state all the criticisms.

The reviewer begins by saying that, —

"The contents are devoted to the consideration of the most abstruse, metaphysical, pathological, and physiological subjects; every page abounding with references to, or quotations from, authors of every age, and of every country;" &c. "It certainly is a favourable specimen of the laborious research and elaborate study of the writer. It reminds us of the German school of authorship; or of such books in our own language, as Burton's *Anatomy of Melancholy*; and puts to shame those medical authors who favour the world with the results of their experience, observation, and acquirements, without indicating always the sources, whence they have derived their knowledge.

"For our own parts, however, we candidly confess that WE HAVE A PREDILECTION FOR THIS LATTER CLASS of writers": &c. (See *Reply*, p. 54—55.)

"The opinion Lord Byron had of the book, to which we have above alluded, as a literary work, coincides exactly with our own, respecting this as a medical one: — 'Burton's *Anatomy of Melancholy*,' said he, 'is the most useful book for a man who wishes to acquire the reputation of being well read with the least trouble. But, among the medley of quotations, the SUPERFICIAL reader must take care, or his intricacies will bewilder him. If, however, he has the patience to go through his volumes, he will be more improved for literary conversation than by the perusal of any twenty books with which I am acquainted; at least in the English language.'" (Rev. pp. 392, 393. See *Reply*, pp. 1, 65.)

Samuel Johnson, also, was wont to say, that — "Burton's *Anatomy of Melancholy* was the only book that ever called him from his bed an hour before his allotted time."

"In every section of his Essay, while he displays both industry of research and dexterity of applying quotations and references;" (') &c. (Rev. p. 399.)

(1) The Capitals and Italics are the author's, a liberty which the author has taken in common with his reviewer

Were it not that the author's belief in the "immortality of the soul" has been impugned by the reviewer, he would have been quite disposed to allow the foregoing remarks to stand as a commentary upon the objections which occur in other places. The reviewer also does the author the honour of saying that, "*His work will be a lasting monument of the author's profound and multifarious reading,*" — but there stands in repulsive contrast with this compliment the sentence immediately preceding, in which it is said that the work "*savours much more of the lamp than of the dissecting-room; and of the study rather than the bed-side of the sick.*" (Rev. p. 393.)

We will soon see how far the foregoing conclusion is sustained by the proof which is offered by the reviewer; but, in the meantime, as to the *matter of fact*, the author will now put that at rest, by stating what is notorious amongst all his familiar acquaintances; that for more than a quarter of a century, his *days* have been *laboriously* devoted to the *practical* duties of his calling, and among those temperate classes of society where the best opportunities occur for pathological observation; whilst his literary labours (of which the "Commentaries" are not a moiety of what he has prepared for publication) have been mainly accomplished during those hours which are commonly allotted by mankind *to rest*. So far, the author concedes that "his work" may "savour of the lamp." As to the imputed neglect of "the dissecting-room," the author refers to his work on the "Cholera Asphyxia of New-York," to his Essay on Venous Congestion, and to the general character of the "Commentaries," that he is not obnoxious to the inconsistency of having neglected morbid anatomy. The author also in farther justice to himself will say, that, until the present season, though always toiling, it has been, for the last ten years, at the uninterrupted expense of health.

Let us, however, have the facts which have suggested the inference that the author has raised "a lasting monument of his profound and multifarious reading" by "the lamp," whilst he has squandered his days in idleness.

"We shall best enable our readers," says the reviewer, "to form their own opinion of the style and value of Dr. Paine's comments on other authors, and of *his own* PRACTICAL INFORMATION, by selecting a few of his criticisms on some of the more recent writers on bloodletting.—[*The author quoting without omission.*]

1. "Dr. Wardrop says, — 'The leading symptom by which the constitutional disturbance demanding venesection is indicated, will be found in the quality of the pulse.'

"Our author states, — 'There is scarcely any symptom, *per se*, that is less to be trusted to than the pulse, UNLESS IT POSSESS CERTAIN POSITIVE CHARACTERS.'

(Rev. p. 397. Comm. vol. i, p. 233.)

To which the author immediately adds, —

“One of these, *incompressibility*, Dr. Wardrop defines well. *Hardness* is another characteristic which *goes far* towards indicating the propriety of bloodletting, — since both are commonly the result of inflammatory action. But, the philosophical physician will be determined in all his remedies by the GENERAL ASSEMBLAGE of symptoms; especially local ones, if they exist. Again, the pulse is well known to be subject to the greatest variety of changes from *transient* causes.” (*Comm.* vol. i, p. 233.)

The author has entered very largely into the consideration of the state of the pulse in venous congestions, and congestive fevers, and apoplexies, to show that it may, “*per se*,” be a fallacious guide; and he flatters himself that what he has said on this subject alone proves sufficiently that he has been not only an attentive, but an *extensive*, observer of disease “at the bedside.” (See *Comm.* vol. i, *all that follows in immediate connection with the foregoing quotation, from p. 233—239, and particularly the following also*, pp. 197—209, 342—343, 184—194, 239—309, 328—335; vol. ii, pp. 294—298, 231—249, &c.)

2. “Again, page 236, our author states,” says the reviewer, — “‘We think that very few will agree with Dr. Wardrop that,’ — ‘there is usually NO APPEARANCE of the buffy coat in blood removed from persons affected with VIOLENT INFLAMMATIONS UNTIL THE LATTER STAGE of the disease, and AT THE VERY PERIOD WHEN the further abstraction of blood would be PERNICIOUS.’” (1)

“‘On the contrary, indeed,’ Dr. Paine says, ‘we find in ninety-nine of one hundred SUCH cases, that the BUFFY COAT is presented at the *first bleeding*; and has *disappeared, more or less, when* the ‘further abstraction of blood would be pernicious.’” (*Rev.* p. 398. *Comm.* vol. i, p. 236.)

The author has no comments to make.

3. “‘Again, Dr. Wardrop says,’ — ‘in almost every case where venesection is necessary, there is present along with the disturbed action of the arterial system some LOCAL PAIN, more or less severe.’” “‘Now this,’ says our author, ‘is notoriously NOT THE CASE in very many instances of *venous congestion*, in many *chronic* inflammations, and often in severe cases of *pneumonia*; in all of which bloodletting may be indispensable.’” (*Rev.* p. 398. *Comm.* vol. i, p. 237.)

The author is content.

4. “Dr. Arnott states,” says the author, “‘that it is a great modern improvement in the practice of the healing art, in bleeding for the cure of inflammation, to take the blood away AS QUICKLY AS POSSIBLE; SINCE INTENSE INFLAMMATIONS OF THE BRAIN, LUNGS, BOWELS, &c. are EQUALLY REMOVED BY FAINTNESS, WHETHER it happens after the loss of TEN ounces of blood, or of FIFTY.’” “‘This,’ says our author, ‘is a fallacy.’” (*Review*, p. 398. *Comm.* vol. i, p. 215.)
; “‘or even, as sometimes occurs, when it happens without bleeding at all, after merely tying the arm in preparation.’” (2) (*Comm.* *ibid.*)

The foregoing words in *Italics* are a part of the author’s extract from Dr. Arnott, and are continuous with the word “fifty,”

(1) “‘Wardrop on Bloodletting, p. 41.’”

(2) “‘Arnott’s Elements of Physics, vol. i, pp. 470, 472.’”

where the reviewer broke off. As the reviewer, also, was exhibiting examples of the author's "*style and comments*," as well as "practical information," he should have begun the quotation with the "comment" as it occurs in the Commentaries. Thus:—"FROM the FOREGOING CONSIDERATIONS will appear the fallacy of the statement made by Dr. Arnott, 'that it,' " etc. The author has no such abruptness, as, "this is a fallacy." The reviewer goes on,—

"Dr. Paine adds, in a significant note, — 'Hence, too, appears the fallacy of applying the *elements of physics* to considerations of this nature.' " (*Review*, p. 398.)

Such is the author's doctrine throughout the "Commentaries."

5. "In the same *ex cathedra* STYLE Dr. Paine criticises the opinions of other writers. He thus concludes his strictures on Dr. Marshall Hall. — 'But the most exceptionable part of Dr. Hall's rules, *as it appears to us*, applies to the repetition of bloodletting. "If MUCH BLOOD has flowed," says, Dr. Hall, "before incipient syncope has been induced, revisit your patient *soon*; and you will probably have to REPEAT the bloodletting in consequence of the severity of the disease, especially if you were not called in early in the first instance. If, on the contrary, LITTLE blood has flowed, NEITHER DOES THE DISEASE REQUIRE, nor would the patient BEAR, farther general depletion. Is not this an interesting and important piece of information?"—(*Review*, p. 398.—*Comm.* vol. i, p. 218.)

"We have made these quotations, which we might extend to ANY LENGTH, partly to exhibit the STYLE of Dr. Paine's criticisms, and partly to give greater currency to the valuable suggestions which he so strongly reprobates." (*Review*, p. 398.)

But again, the reviewer, after some general comments:—

6. "In Vol. I, page 337, Dr. Paine says, — 'we hold it (bloodletting) TO BE more important in infancy, under equal circumstances, than at any other age; and this ratio increases as we ascend to the hour of birth.' In page 361, among the aphorisms ["general results"] with which he concludes his essay is the following.

7. "'Bloodletting is equally safe at all periods of life, BUT is *most indispensable* in old age.'

"Now, we submit, that if Dr. Paine's practice had been GUIDED BY EXPERIENCE instead of THEORY, he would not have come to conclusions, and have made UNQUALIFIED ASSERTIONS so fraught with danger." (*Review*, p. 399.) [The author has quoted all the examples, and uninterruptedly.]

In the first place, the reviewer will admit that there is a great difference between the expression "*we hold it to be*" and "*we hold that it may be*," which last are the words of the author at the beginning of the quotation marked 6; and this, more especially as the author was then engaged in surrounding the operation of bloodletting in infancy with a variety of precautions. The reviewer will also take notice that he has committed a great injustice by leaving out a part of the sentence which forms the quotation 7, and by inserting the word "but," and by then placing the words "*most indispensable*" in Italics;—by which he makes his author contradict himself as to what he ~~has~~ said, in No. 6, of the greater importance, in a general sense, of

The reviewer has fabricated

bloodletting in *infancy*; and this is farther enforced by the management of the quotation ⁶. The author will now state the "general result" as it stands in the "Commentaries:"—

"It [bloodletting] is equally safe at all periods of life, is most indispensable in old age, though not less important in *MANY* diseases of infancy." (*Comm.* Vol. i, p. 361.)

The reviewer will farther perceive that he had overlooked *much* of the author's extended remarks on bloodletting in infancy, when he attributes to the author "*unqualified assertions* so fraught with danger." Nor are they "assertions," but the result of large experience, of a long process of reasoning upon that experience, and sustained by numerous citations from the highest authorities in medicine. The author has quoted, in his remarks upon bloodletting in *infancy*, the *language* of *Piorry, Sydenham, Rush, G. Baillou, Forestus, Evanson and Maunsel, Lommius*, and has referred to many others, who go to the full extent with the author as to bloodletting in infancy. In the author's remarks upon *old age*, he first cites Celsus, Hippocrates, Galen, and Trallian, as commending bloodletting in the diseases for which the author has advised it. He also quotes *Wepfer, Forestus, F. Hoffmann, Van Sweiten, Vitel, Foucart, Sir G. Blane, Rush, Hosack, Hourman* and *Dechambre, Piorry, Frank, Gui Patin, Fréteau, Guersent, Lancisi, Coschwiz*, and refers to others, as going to the full extent with himself, and even *much farther*, in respect to bloodletting in *old age*.

But, the reviewer farther committed a great oversight in attributing to Dr. Paine, exclusively, the quotations marked 6 and 7, since the author, (finding them justified by his own experience, and by the best of the profession,) *adopted both of them from Dr. Rush*, who goes, however, a little farther than the author. Thus, the "Commentaries" say,—

"Dr. Rush thinks, [says] '*that bloodletting is more necessary in the diseases of INFANTS, under equal circumstances, than in adults.*' He was an unhesitating advocate of bloodletting in inflammatory affections at all stages of infancy." ⁽¹⁾ (*Comm.* vol. i, p. 336.)

And again Dr. Rush, as to *old age* :—

"It is manifest, from what was stated of Rush's experience of bloodletting in infancy, that he considered the remedy most important at the extremes of life; for, in another work he says,—'*Experience proves that bloodletting is more necessary, under equal circumstances, in OLD AGE, than in any other.*'" ⁽²⁾ (*Comm.* vol. i, p. 340.)

(1) "Rush's Sydenham, p. 167, note, and his Medical Observations."

(2) "Rush's Cleghorn's Diseases of Minorca, c. 6, p. 166, note."

The author's reviewer, in the BRITISH AND FOREIGN, also quotes the extract 7, without the slightest reference to the author's qualifications of the remedy, or to his numerous authorities, whom he brought to his support.—(See *Reply*, p. 50—51.)

And yet the reviewer was quoting from these pages, and says that he had given to the work "a careful perusal." (P. 393.)

As to the illustrious Dr. Rush, he laid the foregoing "aphorisms" before the world without the *slightest* qualifications; and, indeed, they were so irresistibly prompted by *his* vast "experience," that he appended them as *notes* to the works of others, and where his *notes* are *rare* and *brief*. At another time, in speaking of bloodletting in old age, he says, —

"I have NOTHING TO SAY upon the acute diseases of *old people* EXCEPT to *recommend bleeding* in those of them which are attended with *plethora*, and an inflammatory action in the pulse."⁽¹⁾ (*Comm.* vol. i, p. 340.)

Equally reluctant is the author to record an observation which immediately follows the foregoing citations from the reviewer. Thus:—

"The same RECKLESSNESS in recommending bloodletting PERVADES the work." (*Review*, p. 399.)

The author has no farther comment to make, than to refer the reader to the *quietus* he has given this charge at page 50—51 of this *Reply*. But, was there ever a Brunonian who would tolerate a page of the "Commentaries"?

It will have been thus seen, that both reviewers have thought that an *onslaught* upon the author's *practical* habits and information would be the most successful mode of wounding his reputation, as a writer and practitioner. But, the author, having quoted all the evidence to the intended effect, is fully willing to rest his reputation for experience upon the citations, without exception, even in their isolated and mutilated shape.

True, the reviewer charges that the author "not unfrequently perverts the opinions of writers, and even distorts their facts, if they militate against his preconceived views." (*Rev.* p. 400.) But, if such were really the fact, it would have been an easy matter for the reviewer to have shown it, since the author has always referred to the *page* of the work from which he may have quoted, or have derived an opinion, — and this not a little to the surprise of the reviewer. (*Reply*, p. 73.) This course would have been just to the injured, and highly gratifying to the author; since he would have been as ready to *acknowledge* any act of injustice, as he ever will be to defend himself. The reviewer then goes on immediately thus:

"On the other hand, he arrays on his side of the question [solidism] as solidists or vitalists, men whose writings cannot be so fairly interpreted; and many living writers we apprehend, will be surprised to find themselves in such company.

(1) "Med. Inquiries and Observations, vol. i, p. 453."

"For INSTANCE, he designates this Journal as 'that *stable solidist*, the Medico-Chirurgical Review;' and adds 'we consider Dr. Johnson HIMSELF in all respects a solidist.' Now we need only appeal to our readers, whether this Journal has not INVARIABLY ADVOCATED THE OPPOSITE DOCTRINE." "EX UNO DISCE OMNES!" (Rev. p. 400.)

But, why has not the reviewer mentioned others? For the plain reason, that he would have incurred the risk of the author's contradiction. It was even an act of rashness to have gone as far he has, as the author will now show. "*Ex uno disce omnes!!!*"

Had the reviewer quoted the sentence from which he has culled the words "stable solidist," &c. there would have been no necessity for the subsequent appeal to his readers, who would have seen the true import of the word "*stable*." Thus:

"It is not improbable,' says that *stable solidist*, the Medico-Chirurgical Review, 'that a PRACTICAL BASIS will be laid, for the distinction of fevers DEPENDENT ON THE STATE OF THE BLOOD, from those where the nervous system is the primary seat of disease.'" "M. Bouillaud is too sharp-sighted not to perceive the weak points of his pet doctrine, and not to see the necessity of admitting that THE FLUIDS as well as the solids may become PRIMARILY ALTERED in some diseases.'" "*Like most men of sense and experience*, Dr. Maitland inclines to the opinion that *solidism* went as far in one extreme of error, as the humoral doctrine did in the other, — much farther indeed.'" (Comm. vol. i, p. 393.)

Indeed, the entire page 393 is devoted to extracts from the Medico-Chirurgical Review, for the purpose of showing that the Journal had become a humoralist, (as we now see it broadly affirmed by its editor,) and the word "stable" refers to the Journal's former defence of solidism, and its more recent support of humoralism. Upon this page the author quotes to the foregoing effect, from "Vol. XV. p. 354; Vol. XXX. p. 388; Vol. XV. p. 337; Vol. XI. p. 337; and Jan. 1839, p. 69." In other places he has similar quotations from the Journal. Introductory to the foregoing, the author has the following remark:

"As we purpose 'breaking a lance' with philosophers whom we hold in great reverence, and to whom, as we sincerely think, none can be more indebted than ourselves for sound information on other subjects, it seems to us proper that we should *first pay our respects to the REVIEWERS*. Not that there has been any attempt, on their part, to crowd the doctrine, but

"The name of Cassius honours this CORRUPTION,
And chastisement doth therefore hide his head."

"We certainly do not intend to review the reviewers. This, we admit, would be indecorous, and beyond our province, since it is conceded that they possess a 'final jurisdiction.' Besides, we are *single handed*,⁽¹⁾ and have nothing but facts for our weapons. The

(1) It is very rare that the author "arrays on his side" any authorities in a general sense. Hunter & Bichat he rather *defends* against the imputed taint of humoralism. (Comm. vol. i. pp. 626, 633-636.)

contest, therefore, would be manifestly *unequal*; and being so, we have long since made up our minds — ‘that discretion is the better part of valour.’ ‘OBSEQUIUM AMICOS, VERITAS ODIUM PARIT;’ ‘yet would we reluctantly HAZARD the latter by offering our sentiments on the doctrine laid down BY THEM, did we not consider that all enlightened minds are open to the impression of truth, and that in scientific pursuits, it is not *the man* but *the opinion* which is the subject of disquisition.’” (*Comm.* vol. i, p. 391—392.)

“Careless of censure, nor too fond of fame;
Still pleased to praise, yet not afraid to blame.” — *Pope*.

And now, as to the author’s *special* exception of Dr. Johnson, senior. The author has always had a great veneration for this philosopher, and has endeavoured to manifest it in his “*Commentaries*.” (Vol. ii, p. 671, &c.) His *only motive* for making the reservation was his firm conviction that this eminent man was mainly, if not wholly, a solidist, and it was done merely as an act of justice. It occurs in a *note* at the page where the author was quoting largely from the *Medico-Chirurgical Review* in behalf of humoralism. Thus:—

“We consider Dr. Johnson himself, in all respects, a solidist. See *Med. Chir. Rev.* July, 1836, p. 148.” (*Comm.* vol. i, p. 393.)

Let us now turn to that number of the *Journal*, and see how far the author is sustained in this act of common honesty. We read as follows; Dr. Johnson speaking in *propria persona*:—

“There is, after all, but little real difference between DR. ADDISON and DR. JOHNSON. The chief difference is this: The *former* thinks the entrance of *medicines*, as well as poisons, into the circulation, unnecessary. The *latter* thinks that medicines, and poisons in medicinal doses, do enter the circulation before their full remedial agency can be effected, — always excepting, of course, those medicines which act, and are intended to act, *locally*, as purgatives, &c. PROPOSED MODUS OPERANDI OF MEDICINES. I submit that, in cases where medicines are exhibited in medical doses, *viz.* for the remedy of disease, and not for the destruction of life, the MODUS AGENDI consists of three distinct and consecutive processes, as far as the evidence of our senses is concerned.

“*First.* The physiological action of the medicine itself on the NERVOUS SYSTEM of the part or parts to which it is applied.

“*Secondly.* The physiological action or reaction OF THE NERVES on the vascular, glandular, or fibrous tissues of the same part or parts.

“*Thirdly.* The Physiological action induced in the vascular, glandular, and fibrous part or parts, by the TWO PRECEDING PROCESSES; in other words, the remedial effects or products of the medicine employed.” “In these three consecutive processes, then, this *tria juncta in uno*, we HAVE THE MODUS OPERANDI OF MEDICINES. The medicinal agency is the first, — the nervous agency is the second, — the vascular agency is the third.” “The only question that remains, and in this I differ from the exclusive sympathetic doctrine, is this: — is the nervous system of the various parts *remote* from the seat of *primary* impression, (the stomach, for instance, when mercury is exhibited,) excited into action by purely nervous sympathy with that primary part, or by the presence of the mercury, however decomposed or modified, carried to these parts by the circulation? This is the problem to be solved, and my own opinion is, that the probability is in favour of the latter supposition, — namely, that the mercury permeates throughout

the whole system, and acts on EACH INDIVIDUAL ORGAN AND PART, THROUGH THE NERVES AND VESSELS, IN THE SAME WAY AS IT DID ON THE PART TO WHICH IT WAS FIRST APPLIED." (Dr. JOHNSON in *Med. Chir. Rev.* July, 1836, p. 147—149. *Author's caps. &c.*)

Dr. Johnson, therefore, is, or was in 1836, an *exclusive solidist*, though he differs from the author in not *denying* the absorption of mercury and such medicinal agents as do not act as cathartics, or whose action is local. What is true of medicines, is equally so of morbid agents, as to their *modus operandi*; but, we have in the "Commentaries" Dr. Johnson's direct opinion, to the foregoing effect, as to the latter. (See *Comm.* vol. i, pp. 473, 474, 486, &c. Also, pp. 515, 527—529, 546—562.) The author laments the necessity of so much detail; but, this work must not be imperfectly done. The reviewer has no other charge, well or ill-founded, under his remarks on the Humoral Pathology, unless it be that he states that the author

"Exposes, and attempts to controvert the opinions of all writers, from Galen downwards, who advocate the humoral pathology." Also, — "He is a *confirmed solidist*, and DEMOLISHES, with unsparing criticism, hosts of authors WHOM HE QUOTES, whose views militate against his own." (*Review*, p. 400.)

The reviewer quotes the author as to the great question between the solidists and humoralists, and says, "it is fairly stated by the author." The statement occurs in this *Reply*, p. 58. The reviewer then adds, that "we are satisfied with the answer of M. Andral to this question," which the reviewer quotes, as it occurs in this *Reply*, p. 58, beginning with "Philosophy leads us," etc. (See *Reply*, p. 57, *note*, *Andral*; and *Comm.* vol. i, p. 626—632.)

The reviewer agrees to the "existence of vital forces, properties, or something inherent in living beings *totally distinct* from chemistry, galvanism, or other analogous powers, and which can neither be produced nor imitated by any of these agencies;" but thinks that "many of the processes of life may be modified by chemical and mechanical causes." He objects, however, that,

"The author treats with great severity the opinions of those philosophers who attempt to explain the phenomena of life on chemical or other analogous principles, and whom he terms the chemical physiologists." (*Review*, p. 394.)

He remarks, in this place, that the author "unfairly" "*demolishes the doctrines of Prout, Philip, Davy, Bostock, Elliotson, Müller, et id omne genus*," (p. 394;) but he does not say in *what instance* any unfairness occurs. The author, therefore, can make no reparation, nor is any one protected by asseverations of so universal a nature. May it not be, also, that there is as little ground for this imputation, as there was for the charge in respect to "the stable solidist" and "Dr. Johnson"? (See *Reply*, p. 78.) As to the style and manner in which the author's criticisms are executed, the world must judge between the author and the few

who may not receive the author's remarks in that spirit of liberality which is the general characteristic of philosophical minds. The author certainly made no distinction between the distinguished Journals who are the subjects of these remarks, and those writers who do not exercise the critical pen; and even Dr. Forbes' "Cyclopædia of Practical Medicine" came under the author's consideration. (*Comm.* vol. i, pp. 531—539, 576—581.)

In respect to the Essay on animal Heat, the reviewer states it as the opinion of the author, that,

"Heat is secreted or eliminated through the united agencies of these [vital] powers from the blood, in the same manner as the bile or gastric juice. This is certainly a very plain and simple statement of the matter. But, there is no great novelty in it. Hunter maintained the SAME OPINION." (*Review*, p. 401.)

Certainly, and so did Bichat, and many others whom the author has quoted to the same effect. Why, then, this *insinuation*? Had not the doctrine become "obsolete" (as *Dr. Carpenter's* reviewer more than implies of the "vital principle,") (1) when the author wrote? No matter what denials may now be made;—the records are strewn around us. The reader, who may take the trouble of comparing the foregoing statement of the present reviewer with his of the British and Foreign, (*Reply*, p. 60—61) will find an amusing discrepancy between the critics, as on many other topics. He of the Medico-Chirurgical also quotes the remark of Hunter which occurs at that page, (and which, by the way, was printed before the author knew of the existence of the present review),—he quotes it, we say, for the purpose of showing that the theory *belongs* to Hunter, and in a way that leads to the belief that the fact had been overlooked by the author; when, indeed, that quotation, among several others of similar import, stands as a motto to the author's Essay upon this subject. (See *Comm.* vol. ii, p. 1.) Nevertheless,—

"The author shows clearly, we think," says the reviewer, "that there are *many anomalies* that cannot be accounted for on THE THEORY that animal heat results from RESPIRATION, and the changes induced on the blood by that process." (P. 401.)

The reviewer, with all his skepticism upon the question of solidism, and the author's doctrine as to the physiological influences of bloodletting, acknowledges "a vital principle"; but the author can discern no other reason for it than what he has already assigned at page 44, this *Reply*.

"But, as this vital principle," says the reviewer, "USUALLY MAKES USE OF CHEMICAL and mechanical agents for its purposes, we may, by investigating the

(1) "It excited our surprise," he says "when reading the Physiology of Muller, to find him CLINGING to a NOTION which it is HIGH TIME should become OBSOLETE. His 'ORGANIC FORCE' corresponds in most respects to the 'vital principle.'"—*British and Foreign Medical Review*, Jan. 1839, p. 172. See *Reply*, pp. 15, 32—34, 40, 63.

laws of these agencies, be assisted in explaining some of the phenomena of animal heat," &c. (*Rev.* p. 401.) — See *Reply*, pp. 32—34, 40.

The "*chemical* and mechanical agents," therefore, do the work. (See *Reply*, p. 42, *Newton's aphorism*.)

"Coming events cast their shadows before." The reviewer is evidently impressed with the belief that the author has, also, done some service in his *Essay on the Philosophy of Digestion*.

"In the next," says the reviewer, on "the *Philosophy of Digestion*, the author states that the GASTRIC JUICE is a substance, *sui generis*, ENDOWED WITH VITAL POWERS — that it can ONLY BE GENERATED by a LIVING STOMACH — that it CANNOT BE IMITATED BY ART; and that through its agency alone digestion is performed. These are TRUISMS WHICH FEW, in the present state of our knowledge, will be HARDY ENOUGH TO CONTROVERT." (*Rev.* p. 401.)

And this, in the very face of his own chemical theory of organic results, and of the multitudinous, living writers, whom the author has quoted in direct contradiction of all the foregoing propositions. (See, also, this *Reply*, p. 63, *Dr. Carpenter* and *note 2*.) The review, however, has the following *saving* clause in a note,

"For fear some prudish readers should grow skittish."

"For some interesting experiments on ARTIFICIAL DIGESTION, we beg to refer our readers to two Essays by Professor Müller and Dr. Schwann, in 'Archiv. für Anat. und Physiol. for 1836.'" (*Rev.* p. 401, *note*.) [See, also, the same, extensively, in the author's *Essay*.]

The reader will have also observed that the reviewer goes with the author in supposing the gastric juice to be "endowed with *vital* powers"; or, in the peculiar language of the British and Foreign, he "mixes them up with the gastric juice." (*Reply*, p. 63.)

Having now got rid of vitalism and solidism, (*Reply*, p. 64,) the remaining Essays are disposed of in the following manner:—

"The succeeding *Essay* is a review of the various theories of Inflammation. All are rejected by our author; and his own, the *vital* theory, considered the only true one.

"The next *Essay* is on The *Philosophy of Venous Congestion*. It is most elaborate; occupying more than half the volume. As it CONSISTS, *however*, MAINLY OF QUOTATIONS AND CRITICISMS, we shall not attempt to analyze or abridge it. [May it not "consist mainly of" something more?] (*Reply*, p. 64—65.)

"[One hates an author that's ALL author." — *Byron*.]

"Two Essays on the Comparative Merits of the Hippocratic and Anatomical Schools, and on the Principal Writings P. Ch. A. Louis, M. D., conclude the work.

"In the brief sketch we have given of this very voluminous and erudite performance, we have endeavoured to lay before our readers the peculiar views and opinions of the author." [?] "We willingly award to him the merit of multifarious reading and research; and of untiring zeal in the support of his doctrines." (*Rev.* p. 401—402.)

Confessed the truth that could not be concealed,
That fraud might drive his author from the field.

The author now comes to his reviewer's most important misrep-

resentation. The reviewer, in referring to the author's argument derived from Scripture, in behalf of the specific nature of the vital principle, (*Comm.* vol. i, p. 86—98,) quotes the author as follows:—

“Assuming Scripture as a ground of argument, the author says,—

1. “‘It is manifest that man was completed in his structure without life before he became endowed with a soul, and that the act, which created his soul, bestowed also the vital forces. One appears to be as much a new creation, distinct from the forces of dead matter, as the other. When man was already perfected in his structure, he was without life. But, by the act of breathing into his nostrils, his peculiar physical life and his soul were simultaneously created; and such is their COMPANIONSHIP WHILST LIFE CONTINUES, that some philosophers have considered them IDENTICAL. And how perfectly in harmony is all this with the exit of man. His soul and the vital forces leave the corporeal frame simultaneously; nor will either be RESTORED but by another act of creative energy.’ (*Comm.* vol. i, p. 87.)

“He then triumphantly shows, [that is, *four pages farther on*,] that,—

2. “‘The vital forces cannot be generated by matter, since upon them organization depends; nor by the forces of physics, since these are perfectly incapable of restoring the structure, or even its elementary composition, after the organized matter is decomposed, or of reanimating the machine after decomposition has begun’”; whilst, on the other hand, these are the forces which lay waste the structure, and only so, after the signs of the vital forces shall have totally disappeared.’ [The words in *italics* being omitted by the reviewer.] (*Comm.* p. 92.)

“We need scarcely point out,” the reviewer goes on, “the incongruity of these passages. In the latter, the author states that the vital forces are the cause of organization, whereas in the former it is shown that man was perfected in his ‘STRUCTURE,’ [to which the reviewer adds—or organization] before he was endowed with the vital forces: nor need we advert to the IRREVERENT EXPRESSION that ‘the soul will not be restored, but by another act of creative energy.’ We DO NOT MEAN TO INSINUATE [!] that in this and SIMILAR PASSAGES the author DENIES THE IMMORTALITY OF THE SOUL; but his language on this—the creation of man, and other sacred subjects, is so VAGUE, and OFTEN SO CONTRADICTORY, that WE FEAR DOUBTS may be engendered in the minds of many of his readers.” (*Rev.* p. 395.) The capitals are the author’s.

“Fear not to lie, ’twill seem a lucky hit:
Care not for feeling, pass your project jest,
And stand a critic, hated yet caressed.”

First. Taking the import of the extracts in their isolated state, the reader will at once perceive that the imputed “incongruity” has not a shadow of existence; since in the extract marked 1, the author’s argument relates to the CREATION of the soul and vital powers by a *direct Act of God*; whilst in that marked 2, the discussion is intended to demonstrate the *Creative Act* by showing, that after the *Act* of creating the vital powers, the reproduction of *organization* is made to depend upon the integrity of those powers in their established connection with organized structure, and that “they cannot be generated by matter, nor by the forces of physics.” No. 2, therefore is, as designed, a full demonstration of the *Creative Act of God*; whilst it is equally opposed to spontaneous generation. But, the whole argument in this place, extending over

many pages, bears directly in opposition to the reviewer's imputation of "incongruity."

The reckless, and *ad captandum* assumption is then put forth, (in immediate connection with the foregoing,) that

"Discrepancies of the kind to which we allude, may be found IN ALMOST EVERY PAGE OF THIS ESSAY, [Vital Powers.] For instance, in the passages we have quoted above [1 and 2,] the author is COMPELLED to have recourse to Divine agency for the creation of his vital forces; yet, in a note, he says that 'the whole work of creation was MIRACULOUS, and therefore is not connected by any analogies with the subsequent processes of NATURE;' [where is the "discrepancy" ?] and in page 10, he states: — 'Some able writers have lately appeared, who, admitting that life consists of a certain series of phenomena peculiar to organized matter, and having endeavoured to EXPLODE THE ENTIRE DOCTRINE which regards THE FORCES upon which those phenomena have been supposed to DEPEND, have proceeded so far as to affirm that the Deity himself is the IMMEDIATE cause of all the phenomena of nature. [See extracts from D. Carpenter; *Reply*, pp. 10, 46.] The latter construction has arisen, in part, from the irresistible conviction that actions of all kinds require a certain power for their development. With this class of reasoners it will be difficult to argue, since their doctrine is a matter of faith, and not of reason. There is no common ground betwixt us.'" — (*Rev.* p. 395.) [Where again, is the "discrepancy" ? Here the review breaks off; but the author will go on.] "We will say, however, that whilst we equally acknowledge the *superintending care* of the Creator, his method of governing the material world consists as perfectly in the agency of certain forces appertaining to matter, as the matter consists of something distinct from the Deity. The existence of both DEPENDS EQUALLY UPON HIS WILL; — that is to say, the Maker of the Universe *having brought* them into existence, it is His will that they shall so continue, and that the forces of matter, like the mind, shall operate after a certain manner, and according to their respective endowments. Any thing *beyond this* WE BELIEVE TO BE SOPHISTRY; and, ALL WRITERS who deny to living matter an 'organic force,' begin to expound the actions of life *through the medium of such a force*, the moment that those actions become the subject of consideration." (*Comm.* vol. i. p. 10. — See *Reply*, pp. 9-12, 26-27, 29, 31-34, 36-38, 40, 46-48.)

Here, then, we have all the "discrepancies" that are imputed to the author, and it may be well supposed that his work was thoroughly *hunted*,

"With mind well skilled to find or forge a fault."

But that there is the *slightest* discrepancy in the foregoing statements, the author does not allow; and, he submits to any just and intelligent critic that they are all perfectly compatible with each other, with reason, and with *Revelation*. Creative Energy and second causes, the author holds to be distinct; inasmuch as One is Self-Existent, and the other a subordinate agent created by the Self-Existent Being.

The author has emphasized the word "COMPELLED," in the extract from the reviewer, to show the *quo animo* in which the critic perverts his author's meaning to carry out the imputation of "discrepancies," as well as of infidelity. If the reader will also consider the author's rebuke of the doctrine of "Spontaneous

Generation," and the approval which that Appendix receives from the reviewer, the employment of the word "COMPELLED", in its foregoing connection, will show in itself the temper of mind under which the entire review was written.

"'Tis hard to say, if greater want of skill
Appear in writing, or in judging ill."

The British and Foreign Medical Review, and the Medico-Chirurgical Review, having thus put forth comprehensive but vague charges of conflicting statements in the "Commentaries," and the author having shown that all their examples are perfectly exempt from the imputed fault, he will now challenge those Journals to *substantiate ONE instance in the whole work*, where there is any clashing of opinions, of doctrines, or of argument. Should the Journals think it due to propriety to accede to this proposition, the author will then solicit the favour either of admitting, through the same Journals, his mistake, or of defending the statement or statements that may be pronounced contradictory; and, in doing which, he will endeavour to be at least as courteous as his critics.

Secondly. As to the charge of gross infidelity. This must surely have been silenced by the reader, from the obvious import of the word "*restored*," (1) — by which the author clearly means, "*restored*" to "*the corporeal frame*"; the author thereby avowing his belief not only in the "immortality of the soul," but in the *resurrection of the body*. And who will be so impious as to deny that "an Act of Creative Energy" will be exercised in *raising* the dead, and in *reuniting* the soul to the body? Finally, the whole spirit and language of the Essay on the Vital Powers, and of the Appendix on Spontaneous Generation, go to prove the soul's immortality. Of this Appendix, the reviewer observes, that, it "*contains some sensible and well written remarks in opposition to the theory of spontaneous generation.*" (P. 401.) As to the reviewer's general imputation of "similar passages," "vague and contradictory," the author can only commit himself and his reviewer to the ordeal of a juxta-position with the work which is thus impugned; ("TRIO JUNCTI IN UNO";) the author being, of course, perfectly disposed to abide by his own doctrine as expressed in this Reply, at page 43—44.

The author, in speaking of the "*extinction*" of the vital powers, (2) (Reply, p. 19,) would have the reader understand, that throughout his Essay, he contradistinguishes them entirely from the soul, as he also does the "*instinct* of animals," with which they are confounded by Müller and many others. Take the following expos-

(1) "RESTORE. L. *Restauo*. To return to a person; to *replace*; to *return*, as a person or thing to a former place; to *bring back*." (WEBSTER'S Dictionary.)

(2) The *vital powers*, the author supposes, will be *recreated* in common with the "incorruptible body," whatever that body may be. The soul never dies.

tulation, for instance, which is also one of the passages in which the author solemnly avows his belief in the "immortality of the soul," and which stands on the page *opposite to that* from which his reviewer was quoting for the purpose of raising an odious suspicion of infidelity, and who, indeed, subsequently makes the last words of the paragraph apparently the author's sole ground of imputation of materialism against Müller; ("he accuses Müller of materialism." P. 396.) The author, therefore, accomplishes a double purpose in presenting the paragraph; but he will first say, as it respects the German philosopher, that all the premises, from which the following inductions are made, had just antecedently occupied near a page; and, again, other quotations from Müller, to *substantiate* the imputation, are continued in a long note proceeding from the paragraph which the author will now introduce:—

"Our author's (Müller's) argument, as it respects man and the upper ranks, is founded mainly upon the phenomena of generation; and, although it may be that our author would not advocate materialism, in its proper acceptation, yet when he comes to the *divisibility of the soul* of man 'in a certain limited sense,' and associates it, as a *parallel* case, with the *complete divisibility* of instinct, (or, as our author calls it, '*the mental principle*'), in the lowest animals, it appears to us but little better than materialism. This grows, in part, out of our confounding together mind and instinct; in part from IDENTIFYING BOTH WITH THE VITAL PRINCIPLE; and, in part, from speculating upon a subject so far beyond all human comprehension as the endowment of the FÆTUS with a rational, immaterial, IMMORTAL soul." (1) (*Comm.* vol. i, p. 85-86.)

So emphatic, indeed, is the author's whole argument in support of all the attributes that have ever been ascribed to the *soul*, he

(1) We will now have the reviewer's management as to Müller. Thus:—

"Again" says the reviewer, "he accuses Müller of materialism, 'in part from speculating on a subject so far beyond all human comprehension as the endowment of a fœtus with a rational, immaterial, immortal soul.'—Whilst in page 13, he argues on the same point himself;—

[The author will quote from his own work more extensively than the reviewer, placing in italics what is omitted by the reviewer;]

"And yet, if we admit the foregoing premises, [*Bichat's*], the conclusion will also follow, *that the soul has no existence till the brain begins to receive impressions, and its intellectual operations shall have commenced. According to Bichat's rule, if there be no judgment, reflection, &c., in the perfect fœtus, it is like one born without a head. But, Bichat's position is here indefensible; and* [quotation begins] *since, therefore, the fœtus or a new born infant has as much a soul as man, we argue, that if the child sees, hears, tastes, smells, and feels, as soon as it enters the world, the properties on which those functions depend, had a full existence in the fœtal state at the time of birth.*" (*Rev.* p. 396, — *Comm.* vol. i, p. 13.)

The reader will now be able to understand the difference between Müller's speculations as to the soul and the author's, as well as the proper ground of the author's imputation of "materialism, to Müller." The author desires that the whole of his note, *Comm.* vol. i. p. 86, should be examined; when the reader will be also able to do full justice to the author and his reviewer.

was apprehensive, from having regarded the *instinctive principle* of animals as an *immaterial* substance, that it might be thought that his doctrine in relation to the *soul* inculcated the inference that the *instinctive principle* is "immortal" also. He therefore carefully contradistinguished the two; and, finally introduced the following remark, which, in itself, is sufficiently significant of what the author had been saying as to the *soul* of *man*. Thus:—

"It may be said, that it is the TENDENCY of the FOREGOING DOCTRINE to ASSIGN AN IMMORTAL spirit to brute animals. We think not; although we cannot doubt that the substance on which instinctive actions depend, is IMMATERIAL." (*Comm.* vol. i, p. 97.)

The author is mainly interested, at present, in placing the foregoing subject in its proper aspect, as he is soon to publish a *defence* of REVELATION, in two volumes, as *objectionable* in point of size and of "facts" as his "Commentaries," and which will also "savour of the lamp." (1) This work is designed to embrace an examination of *all the principal facts* which lay at the foundation of Theoretical Geology, and will contain the author's Interpretation of the Narrative of Creation, and of the Deluge; that interpretation being in conformity with the literal structure of the Narratives, and, as the author endeavours to show, with the sternest of geological facts.

"Philosophy, that leaned on Heaven before,
Shrinks to her second cause, and is no more." — *Pope*.

The work will also consider, extensively, the Plutonic and Neptunian theories;

"Such as Creation's dawn beheld, thou rollest now." — *Byron*.

Also, the imputed causes of the coal-formations, which the author, in common with other geologists, considers of vegetable origin; — with other, perhaps exhausted, topics.

"But, 'why then publish'? There are no rewards
Of fame or profit, when the world grows weary.
I ask in turn, — why do you play at cards?
Why drink? Why read? — To make some hour less dreary.
It occupies me to turn back regards
On what I've seen or ponder'd, sad or cheery;
And what I write I cast upon the stream,
To swim, or sink. —————"

The author is, therefore, a practical geologist; and as this may

(1) See *Reply*, p. 73. — That great and dignified critic, Samuel Johnson, advises authors — "to consider, how they whom publication lays open to the insults of such as their *obscurity secures against reprisals*, may extricate themselves from unexpected encounters." It is obvious that one of the important expedients, in cases of this nature, lies in raising the veil, and surprising the offender. There is but little in the review now under consideration, by which the author can accomplish this desirable purpose. Nevertheless, he submits, whether the following declaration do not involve a responsibility as to an important position of the Journal, that identifies the writer with "HENRY JAMES JOHNSON, Esq.", the junior editor, — and this more especially as some of his tenets are more characteristic of an "Esquire" than of a Doctor of Medicine.

"Now," says the reviewer, "we need only appeal to our readers, whether this Journal has not invariably advocated the opposite doctrine?" [the Humoral Pathology.] (*Rev.* p. 400.)

"A critic was of old a glorious name.

* * * * *

Conscious of guilt, and fearful of the light,

They lurk enshrouded in the veil of night." — *Churchill*.

appear to militate with what he has said of his *professional* habits at page 74, it is proper that he should state, that geology and mineralogy have supplied the only relaxation in which he has indulged for more than twenty years. These personal statements having been forced upon the author, he will make no other apology. ⁽¹⁾

The author is not disposed to leave what he has said, in his work, on the subject of "fossil animalcula," without farther defence. The question is interesting to him from the manner in which he has connected it with physiological investigations; and especially so as this is the only part of his Appendix on the Microscope which he is aware of having been attacked. (See *Reply*, p. 6.)

In the first place, with the foregoing exception, the whole of that Appendix relates to *soft* organic substances; and to the investigation of these, by the microscope, his objections are intended to apply. He has therefore said:—

"It will be readily seen, also, that there is a *vast difference* between the *solid* and *soft structures* of the body, and that minute observations may be *perfectly practicable* in the former case, when they would *FAIL ENTIRELY* in the latter." (*Comm.* vol. i, p. 707.)

The author certainly never doubted that strong resemblances exist between the supposed *fossil* shields and those of *living* animalcula. But, this does not *prove* the supposed coincidence. The question then arises as to its *probability*, and this will depend much upon the absence of contradictory facts.

Chalk, and its imbedded seams and nodules of flint, are said to be composed of these supposed animalcula. Chalk is light, the flint exceedingly compact. Each must have formed *simultaneously*, according to the hypothesis. Now, then, 1st, how was the requisite amount of animalcula crowded into the spaces occupied by the nodules of flint, which are often of great size? 2d. How

(1) An appeal to the moral philosopher, upon some of the foregoing subjects, may not be inappropriate; and the author will therefore quote the REV. DR. CHANNING upon his side as to the question between himself and the reviewer regarding the resurrection of the dead; as well as to the distinction which the author has made between the "*work of creation*," and "the subsequent processes of nature." (See *Reply*, pp. 85—86.) In speaking of "miracles" and "Creative Energy," Dr. Channing says, —

"If, then, the great purposes of the Universe can best be accomplished by departing from its established laws, these laws will undoubtedly be suspended." "Nature, then, we fear would not have brought back the world to its Creator. And, as to the doctrine of IMMORTALITY, the order of the natural world had little tendency to teach this. The natural world contains no provisions or arrangements for reviving the dead. The researches of science detect no secret processes for restoring the lost powers of life. If man is to live again, he is not to live through any known laws of nature, but by a Power higher than nature; and how then can we be assured of this truth, but by a manifestation of this Power, that is by miraculous agency confirming a future life?" (CHANNING'S Discourse on Revealed Religion, delivered before the University of Cambridge at the Dudleian Lecture, 1821.)

are the geodes of quartz to be explained? 3d. Why is the flint composed of *siliceous* shields and the chalk of *calcareous*? 4th. Why is the flint disconnected from the chalk? These questions must be answered in a way that shall have some plausibility. It has been imagined that these enigmatical formations of flint were primitively sponges, which is probably often true; and the author has heard it confidently said that Ehrenberg explains their conversion into *siliceous* animalcula upon the principle that the sponges subsisted upon *this particular species*. Other philosophers, as the author knows, sustain this opinion as the only solution that can be offered; but to which the following apparently insuperable objections apply.

1st. It supposes that the sponges merely digested the soft parts, without having got rid of the siliceous shields.

2d. It supposes that the sponges continued to devour the animalcula, till they became totally converted into their shields.

3d. It supposes that this curious phenomenon must be going forward in *living* sponges. Are there the necessary analogies?

4th. It does not explain why the siliceous shields of the flint do not abound in the surrounding calcareous deposit, the frequent absence of which must be accounted for.

5th. The animalcula of the flint being specifically different from those of the chalk, increases the 4th objection.

6th. The vast disproportion between the density of the flint and that of the chalk is not explained. Pressure will not account for it, since the accumulation being gradually progressive, the great disproportion should not exist.

Unless the questions, therefore, which have been now propounded, be answered in a more plausible manner, the assumed constitution of nodules and veins of flint must be employed as a lever to overthrow the whole hypothesis. Whatever may be the evidence of affinity between the shields of the supposed fossil animalcula and those of living species, that must be sacrificed to the exigencies of physical impossibilities.

Other difficulties might be raised, — such as the necessary supply of organic nutriment (the vegetable remains in chalk being rare,) — the vast disproportion between the supposed animalcular formations and those of visible animals, &c. If the disconnected state of flints be compatible with the hypothesis that they are casts of spongiform zoophytes, the interpretation of their metamorphosis as given by Bakewell, (*Geology*, p. 245,) and others, would be quite satisfactory. Infiltration might then take place to an indefinite extent, whilst the animalcular doctrine necessarily supposes an apparently fatal limitation. The inquiry, however, is certainly

the most interesting and magnificent that has yet fallen under the microscope, and none would be more gratified than the author to see the hypothesis substantiated.

Note.—It has been suggested to the author that he is not sufficiently *direct* in his *note* at page 67. To avoid this imputation, he will now say that the *note* is intended to expose a *plagiarism* of an extraordinary nature. The author has also good reasons for believing, (and such as will be apparent to others,) that the *CRITIC!* who perpetrated the plagiarism, is a *large* contributor to the *BRITISH AND FOREIGN MEDICAL REVIEW*;

"Whereby 'tis plain its light and gifts,
Are all but plagiarist shifts."—*Hudibras*.

The critic who stands thus arraigned, having thought it not inconsistent to draw as well upon the reputation of the author of the "*Commentaries*," the latter will establish the justice of his imputation, by exhibiting a few examples of what the reader will find, on farther comparison, to abound in the surreptitious articles. It will be also observed that the critic has taken a *critic's liberty* with the style of the American orator.

EXTRACTS FROM DR. CHANNING'S "REMARKS
ON THE CHARACTER AND WRITINGS OF MILTON."

"The wisdom of each age is chiefly a derivation from all preceding ages, not excepting the most ancient, just as a noble stream, through its whole extent and in its widest overflowings, still holds communication with its infant springs, gushing out perhaps in the depths of distant forests, or on the heights of solitary mountains. We mean not, that Milton should have neglected the labours of his predecessors. We only mean to say, that the stream of religious knowledge is to swell and grow through its whole course, and to receive new contributions from gifted minds in successive generations. We only regret that Milton did not draw more from the deep and full fountains of his own soul. We mean not to complain of Milton for not doing more. He rendered to mankind a far greater service than that of a teacher of an improved *THEOLOGY*. He taught and exemplified that spirit of intellectual freedom, through which all the great conquests of truth are to be achieved." "We mean not, that MILTON should have neglected the labours of his predecessors." (P. 65.) [Last sentence is the present writer's repetition.]

EXTRACTS FROM THE *BRITISH & FOREIGN MEDICAL REVIEW*. REMARKS ON HUNTER.

"The wisdom of every age, WE MAY REMARK, is chiefly a derivation from all preceding ages, not excepting perhaps the most ancient, and should hold communication with them, just as a river, through its whole extent and in its widest overflowings, still continues to receive tribute from its infant springs. [! We wish not, therefore, to acquit Hunter of culpable neglect in this respect; although in his case we regret it the less, because it made him draw more deeply from the full fountains of his own vast and comprehensive mind. By his researches into the book of nature, he rendered to HIS PROFESSION a far greater service than if he had moulded into new and more beauteous forms the wisdom and the wealth of all his predecessors. He taught and exemplified that spirit of intellectual energy through which all the great conquests of truth have been and are to be achieved." "It has ALSO been made a matter of complaint that HUNTER should have been so little acquainted with the labours of HIS predecessors.

We have been induced to make these general remarks to save us the necessity of EXTRACTING LARGELY from a WORK which has been SO LONG KNOWN TO THE PROFESSION"! (APRIL, 1839, p. 423.)

"Far, however, from regarding HUNTER as standing alone and unapproachable, we believe that he is an illustration of what many who dream not of this might arrive at in the course of their being; and we would hold out his fame, not to excite an ineffectual admiration, but to awaken others and OURSELVES [!] to the free use and expansion of OUR noblest faculties." (*Ibid.* p. 423.)

"Far from regarding MILTON as standing alone and unapproachable, we believe that he is an illustration of what all who are true to their nature will become in the progress of their being; and we have held him forth, not to excite an ineffectual admiration, but to stir up our own and others' breasts to an exhilarating pursuit of high and evergrowing attainments in intellect and virtue." (P. 66.)

"The attention to these works has been discouraged by some objections, on which we shall bestow a few remarks. And first, it is objected to his prose writings, that the style is difficult and obscure, abounding in involutions, transpositions," and so on. We mean not to deny that these charges have some grounds; but they seem to us much exaggerated; and when we consider that the difficulties of MILTON's style have almost sealed up his prose writings, we cannot but lament the fastidiousness and

"On this point WE shall take the liberty of stating OUR OWN sentiments. [!] We cannot admit that the reasons which have been assigned offer a just explanation of Hunter's obscurity of style; first, because they would only account for some inaccuracies of expression, or statements too hastily or insufficiently put together," and so on. "While we mean not, therefore, to deny that the charge which has been made has some grounds, we think, at the same time, that it has been much exaggerated; and

effeminacy of modern readers.

We know that simplicity and perspicuity are important qualities of style; but there are vastly nobler and more important ones; such as energy and richness, and in these MILTON is not surpassed. The best styles not that which puts the reader most easily, and in the shortest time, in possession of a writer's naked thoughts; but that which is the truest image of a great intellect, which conveys fully and carries farthest into other souls the conceptions and feelings of a profound and lofty spirit. *To be universally intelligible is not the highest merit.* A great mind cannot, without injurious constraint, shrink itself to the grasp of common passive readers. Its natural movement is free, bold, and majestic; and it ought not to be required to part with these attributes that the multitude may keep pace with it. There are writings which are clear through their shallowness. For ourselves, we love what is called easy reading perhaps too well, especially in our hours of relaxation; but we love too to have our faculties tasked by master-spirits." "Such sentences are worthy and noble manifestations of a great and far-looking mind, which grasps at once vast fields of thought, just as the natural eye takes in at a moment wide prospects of grandeur and beauty. We would not indeed have all compositions of this character. Let abundant provision be made for the common intellect." Impose upon genius no strict laws, for it is its own best law. Let it speak in its own language, in tones which suit its own ear. Let it not lay aside its natural port, or dwarf itself that it may be comprehended by the surrounding multitude. If not understood and relished now, let it place a generous confidence in other ages, and utter oracles which futurity will expound. WE ARE LED TO THESE REMARKS, not merely for MILTON'S JUSTIFICATION, but because our times seemed to demand them. LITERATURE, we fear, is becoming too popular. The WHOLE COMMUNITY is now turned into readers, and in this we heartily rejoice; and we rejoice, too, that so much talent is employed in making knowledge accessible to all. We hail the general diffusion of intelligence as the brightest feature of the present age. But good and evil are never DISJOINED; and one bad consequence of the multitude of readers, is, that men of genius are too anxious to please the multitude, and prefer a present shout of popularity to that less tumultuous, but deeper, more thrilling note of the Trump of Fame, which resounds and grows clearer and louder through all future ages." (*Ibid.* p. 20—22.)

"Without meaning to disparage the 'TREATISE ON CHRISTIAN DOCTRINE,' we may say that it owes very much of the attention which it has excited, to the fame of its author. We value it chiefly as showing us the mind of MILTON on that subject, which, above all others, presses upon MEN OF THOUGHT AND SENSIBILITY. We want to know in what conclusions such a man rested after a life of exten-

when we reflect that the obscurity of HUNTER'S style has deterred many from availing themselves of his invaluable labours, we cannot but regret the fastidiousness and effeminacy of modern readers. We are aware that simplicity and perspicuity are essential attributes of a good style; but there are others, as energy and depth of thought, equally noble and important; and in these we will not admit that HUNTER has ever been surpassed. *To be universally intelligible is not the highest merit.* The best style is not that which puts the reader in the shortest time in possession of the author's naked thoughts, but that which is the truest image of a great intellect, and which conveys fully and carries farthest into other minds the conceptions and feelings of a profound and lofty spirit. A great mind, such as HUNTER possessed, cannot, without injurious constraint, lower itself to the grasp of ordinary individuals. Its own natural movement is free, bold, and majestic; and it ought not to be compelled to part with these attributes in order that the multitude may be able to keep pace with it. There are many writings which are clear through their shallowness. For our own part, we prefer easy reading, especially in our moments of relaxation; but we delight, at the same time, in having OUR FACULTIES tasked by master-spirits. There are minds, again, which grasp at once vast fields of thought, just as the eye surveys at once wide fields of grandeur and beauty; and which, in their moments of inspiration, when thick-coming thoughts and images crowd in upon them, pour out their treasures in a manner perplexing to ordinary readers, but kindling to congenial spirits like their own. We would not have all compositions of this character, but WE WOULD IMPOSE no over-strict LAWS on a great mind. WE would let it address us in its own language, and in a tone which accords with its own ear. If not understood at the time, let it look forward with a generous confidence to the improvements of succeeding ages, and utter thoughts which others in future years will unravel. WE HAVE BEEN LED TO THESE REMARKS, not so much IN VINDICATION OF HUNTER as that we think our own times seem to demand them. [!] MEDICAL LITERATURE is becoming in some respects too common and too popular. [!] The WHOLE COMMUNITY is now turned into MEDICAL readers [!] With this we so far acquiesce; nay, we rejoice that so much talent has been employed in making a certain kind of knowledge accessible unto all. We look, indeed, on the general diffusion of knowledge as one of the noblest and most distinguished features by which the coming will be separated from past ages. But good is often CONJOINED with evil; and we fear lest men of genius be led away, by the shout of popular applause or the desire of obtaining sudden wealth, [!] from pursuing that deeper and stiller path where that thrilling note alone is heard which sounds louder and clearer throughout all succeeding generations." (*Ibid.* p. 419—420.)

"Without meaning to disparage the 'TREATISE ON THE BLOOD AND INFLAMMATION,' we may say that it owes very much of the attention which it has excited to the previous fame of its author. We value it chiefly as showing us the mind of a master on a subject, which, above all others, presses itself upon the attention of the PHYSICIAN OR SURGEON. We are desirous of ascertaining in what

sive and profound research, of magnanimous efforts for freedom and his country, and of communion with the most gifted minds of his own and former times." "MILTON had no dread of accumulating knowledge, lest it should oppress and smother his genius. He was conscious of that within him, which could quicken all knowledge, and wield it with ease and might, which could give freshness to old truths, and harmony to discordant thoughts; which could bind together, by living ties and mysterious affinities, the most remote discoveries, and rear fabrics of glory and beauty from the rude materials which other minds had collected. MILTON had that universality which marks the highest order of intellect. His healthy mind delighted in genius, &c. He understood too well the rights, and dignity, and pride of creative imagination," &c. "He had not learned the superficial doctrine of a later day, that poetry flourishes most in an uncultivated soil, and that imagination shapes its brightest visions from the mists of a superstitious age." (*Ibid.* pp. 4, 5.)

"From the very nature of the work, it cannot engage and fix general attention," &c. Milton aims to give us the doctrines of REVELATION in its own words. We have them in a phraseology long familiar to us, and we are disappointed; for we expected to see them not in the language of the Bible, but as existing in the mind of MILTON, modified by his peculiar intellect and sensibility, combined and embodied with his various knowledge, illustrated by the analogies, brightened by the new lights, and clothed with the associations, with which they were surrounded by this gifted man." (*Ibid.* p. 39.)

"We prize it chiefly as a testimony to MILTON's profound reverence for the Christian religion, and an assertion of the freedom and rights of the mind. We are obliged to say that the work throws little new light on the great subjects of which it treats. Some will say, that this OUGHT NOT TO SURPRISE US; FOR NEW LIGHT IS NOT TO BE LOOKED FOR IN THE DEPARTMENT OF THEOLOGY." "The chief cause of MILTON's failure was, that he sought truth too exclusively in the past, and among the dead." (*Ibid.* p. 62.) [*What the critic terms, "relations of ideas;" see Reply, p. 5. Here occur, also, other similar parallels.*]

We shall now repeat Dr. Channing, for repeats him three times, — twice in the *April* (July) number of the Journal. See as above.

"We want to know in what conclusions such a man rested after a life of extensive and profound research, &c. and of communion with the most gifted minds of his own and FORMER TIMES." (*CHANNING'S Remarks on the Character and Writings of John Milton*, Boston, 1830.—See as above.)

[The reader will find in the opposite place, from the July No., a farther repetition of the April No. Dr. Carpenter in his *Principles* repeats himself verbally; an example of which occurs in this Reply at page 41, — showing the writer's habit.]

The author has endeavoured to present a variety in the examples which he has quoted; and, having been induced to be thus explicit, he will carry out the full intention of this note. Throughout his "Examination" of the article in the *BRITISH & FOREIGN MEDICAL REVIEW* he has identified Dr. CARPENTER as the reviewer, and that no doubt should remain upon any mind as to the author's general purpose, he referred in a note at page 67 to numerous parallel passages which occur in Dr. Carpenter's *Principles*, &c. and the foregoing review of the Writings of John Hunter, in which the reader will

conclusions such a man rested, after a life of MAGNANIMOUS efforts to unfold the hidden laws of nature, and to trace the order and regularity with which they occur. [*See July No. below.*] The work before us shows that HUNTER's natural progress was from one field of discovery to another; that he could give a freshness and vividness to truths which had become worn, we had almost said tarnished, by long and familiar handling; that he could bind together, by mysterious affinities, remote discoveries, and rear fabrics of utility and beauty from the rude materials which other minds had neglected. [1] HUNTER's intellect was naturally creative, restless, stirred by a burning desire for the discovery of truth, and he was conscious of that within him which could quicken all knowledge and wield it with matchless power. In treating of practical subjects, he had not learned the superficial doctrine of later days, of discarding or setting at naught legitimate theory."! (*Ibid.* p. 420.)

"To place it clearly before others, he feels the necessity of viewing it more vividly himself. By attempting to secure his thoughts, and fix them in an enduring form, he finds them vague and unsatisfactory, to a degree which he did not suspect; and toils for a precision and harmony of views, of which he never before felt the need. He places his subject in new lights; submits it to a searching analysis; compares and connects with it his various knowledge; seeks for it new illustrations and analogies; weighs objections; and, through these processes, often arrives at higher truths than he first aimed to illustrate." (*Ibid.* p. 418.)

"We prize, then, the volume before us, as being the first in which more just views were disseminated, and a new light thrown over the subjects of which it treats"! "Hence the reason why so many corrections are required in the new edition, to bring down this portion of the subject in accordance with the more correct views of the present day. This, however, was not the fault of HUNTER, but of the age in which he lived. At this we NEED NOT EXPRESS SURPRISE, SEEING THAT THE GROUND HAD BEEN PREVIOUSLY UNTRODDEN." (*Ibid.* pp. 421, 422.) [*A slur upon Hunter's great vital doctrine of inflammation.*]

the purpose of showing how the plagiarist repeats him three times, — twice in the *April* article, and once in the next following (July) number of the Journal.

"Considering the amount of labour and time spent in this investigation, we are naturally curious to know, even at this DISTANT PERIOD OF TIME, in what conclusions such an acute observer as HUNTER rested." (*APRIL*, 1839, p. 424.)

"Considering the amount of labour and time spent in this investigation, we are naturally curious to know, even at this DISTANT PERIOD, in what conclusions such an acute observer as HUNTER rested." (*JULY*, 1839, p. 183. See, also, *Reply*, p. 67, note 2.)

detect peculiar views, and identity of language. The author also shows in that note that his reviewer acknowledges the authorship of these articles. Take the following example from the second article on Hunter, relative to the vitality of the blood, the proof of which Dr. Paine's reviewer assumes to himself, — observing, in his article on Hunter, (p. 178), that Hunter had offered “nothing like proof”!!

REVIEW OF HUNTER.

“The strongest evidence that the coagulation of the blood, when drawn from the living body, is the result of the vital properties which it still retains, appears to us to be derived from the fact that a process essentially the same is the preliminary to the organization of the blood within its natural cavities.” “Now, however, it is known that coagulable lymph and the *liquor sanguinis* are almost identical, and that the red particles are *passive*, or nearly so, in the coagulation of the blood. There is, therefore, a strong argument from analogy for considering this change in the blood in the same light as in the lymph.” “Those who deny vitality to the blood on account of its fluidity, or, in other words, maintain that its properties are only those of inorganic matter, seem to forget that other fluids unquestionably exhibit vital properties.” “Will it be maintained that any mixture of chemical products can imitate the effects of these?” “By such comparisons, it appears to us, we may not only refute the objection urged against the doctrine of the vitality of the blood, on the score of its fluidity, but obtain an affirmative argument of no mean value.” (*Rev. of Hunter*, July, 1839, pp. 179, 180.)

DR. CARPENTER'S PRINCIPLES, &c.

“The *liquor sanguinis*, or fluid portion of the circulating blood, is that in which the tendency to coagulate exists; and it is probably that which is chiefly concerned in supplying nutriment to the tissues, — the globules, so far as can be ascertained, being merely *passive* in the circulation.” “It is almost impossible to consider it without admitting that the *liquor sanguinis* is as completely possessed of vitality as any solid tissue of the body.” “An organized character is not, however, peculiar to living solids; (see *Reply*, p. 36—42,) for some traces of it may be detected in the circulating fluid, which is also possessed of properties that must be considered as *vital*, since they differ from any which a mere mechanical admixture of the ingredients could present. Thus, the phenomena of the coagulation of the blood cannot be satisfactorily explained without this admission” (*CARP. Princip. Sec. 364, 343*).

[The whole of the “proof of the vitality of the blood,” in the articles on Hunter, is repeated hereabouts. Besides the references in *Reply*, p. 67, compare *April* article, 1839, pages 426 to 427, 429 to 435, 440, with CARPENTER'S sections 364, 365, 366, 367, 368, 84, 233, 38, 115, 5; and *July* article, 1839, p. 171 with s. 303; p. 175 with s. 318; p. 174 with s. 367, 368; p. 180 with s. 364, p. 173 with s. 43; p. 177 with s. 365; p. 181 with s. 364; p. 192 with s. 364, 365; p. 186—187 with s. 367; p. 188 with s. 368.]

Again, Paine's reviewer *claims* the authorship of Dr. Carpenter's article on “Vegetable Physiology.” Thus:—“But we may take this opportunity of stating that our belief in the general proposition, which we long ago put forth in an interrogative form, Vol. 4th, p. 20, &c.,” (*Rev. of Paine*, p. 398. See this *Reply*, p. 43.)—Now, take the following from DR. CARPENTER'S *Principles*, &c.:—

“In the following pages is embraced the substance of an Essay on the ‘Laws regulating Vital and Physical Phenomena,’ to which was adjudged the annual student's prize, &c.; and also of an Essay on Some departments of VEGETABLE PHYSIOLOGY,” &c. The author has freely availed himself, also, of the liberal permission of the editors of the British and Foreign Medical Review to make what use he deemed proper of his contributions to that Journal; especially in regard to two papers, — one on the Study of Physiology as an Inductive Science, and the other on the Functions of the Nervous System, — which have been recently honoured with a place in its pages.” (*Preface*, p. 7—8.)

Again, Dr. Paine's reviewer acknowledges the authorship of the article on “Macilwain's Medicine and Surgery One Inductive Science,” (*Rev. of Paine*, p. 400,) and in that article the reviewer says, — “We are not without hope that the exposition which we gave in our last number of the objects and means of Physiological enquiry,” &c. (*Rev. of Macilwain*, July, 1838, p. 98.) Now, this “last” article is the one on “Physiology an Inductive Science,” and which Dr. Carpenter acknowledges in his “Preface.” The acknowledgments are made rather in the way of *claims*; and the coincidences in views and language between the different articles are such as to dissipate all doubt as to the *individuality* of the author. The readers of the Journal will also readily recognise numerous other elaborate articles by the same hand, who appears to be the critic-general for the Journal. The author may safely say that our plagiarist averages more than one very extensive article for the several numbers of the Review, and that most of the principal writers, especially on Physiology and Pathology, whose works have been reviewed in the Journal, have been assigned to his critical pen; and, if the reader will now glance his eye over the articles, he will find in their general spirit a remarkable contrast with that which distinguishes the Review of Carpenter's “Principles,” which, with its author, is lauded without mitigation. Of the extent of this hostility to distinguished worth, and of its common source, the present writer had no just appreciation till he began this “Examination.” But, the spell is broken, and worth redeemed.

Connected with the foregoing review of Hunter's works are critical remarks upon Macartney on “Inflammation,” Carswell's “Illustrations,” &c., and Rasori on the “Theory of inflammation.” The reader will find in the July No. many parallel criticisms upon the writings of Macartney with those which are bestowed upon Paine's. The remarks upon Macartney's doctrine as to the operation of bloodletting are strikingly peculiar and coincident. (*Rev.* p. 199.) Take, also, the following triple coincidences of peculiar views on the subject of *animal heat*: —

HUNTER'S, &c. REVIEWER.

"Dr. Macartney is more than usually mystical upon the subject. He quotes the experiments of Brodie, as if their fallacy had never been exposed, [!] to show that animal heat does not depend upon respiration; and considers that we are to look upon animal heat as 'one of the phenomena of sensibility.' We do not see how this can be regarded as a step in the inquiry. There can be no doubt that its evolution is greatly influenced by the nervous system; but, as we conceive, only through the medium of those molecular changes to which it is immediately due, and which are without doubt controlled to a certain extent by the agency of that system." "It is a well-known fact, that, when a portion of the surface of the body is inflamed, the respiration (so to speak) of that portion,—in other words, its conversion of the oxygen of the air in contact with it into carbonic acid,—is increased; and this, harmonizing with what we know from other sources of the relation between the disengagement of carbon from the body and the maintenance of its temperature, seems to us nearly decisive of the question!"

"We are fully convinced that it is in the altered state of the nutritive processes that we are to look for one cause of the high temperature," &c. (*Rev. of Hunter, &c. July, 1839, p. 197—198.*)

PAINE'S REVIEWER.

"Now what will our readers think is the doctrine, &c. Neither more nor less than this, that animal heat is a secretion; and, like other secretions, a production of pure vitality." "We believe it (respiration) to operate through the nutritive processes, and the molecular changes which they involve." "In Dr. Paine's opinion, then, as in ours, the acknowledged influence of the nervous system upon the production of animal heat is exercised through the medium of the organic functions." "We consider it as a result of those functions produced by the molecular changes which they involve,—these changes being themselves governed by the ordinary laws of chemistry, as we have elsewhere endeavoured to show." "In these processes there are probably many chemical changes involved, besides the combination of carbon and oxygen; and it is to the aggregate of all these,—the last, however, being the chief,—that we attribute the liberation of caloric which was previously latent." "The case stands simply thus: oxygen is introduced into the system from the atmosphere. In some part of the system it combines with carbon, set free in the ordinary processes of nutrition; and in this state it is thrown off in the gaseous form from the body. Now will Dr. Paine tell us why, since we know that the combination of carbon and oxygen elsewhere produces heat, it should not do so here?" (*Rev. of Paine, p. 393—396.*)

DR. CARPENTER'S "PRINCIPLES," &c.

"That many of the nutritive processes are connected with the evolution of animal heat can scarcely be doubted; but it seems peculiarly to depend upon those changes in which the function of respiration is concerned,—viz. the extrication of carbon from the system, in combination with oxygen derived from the atmosphere. Wherever the aeration of the blood is extensively and actively carried on, there is a proportionate elevation of temperature." "The carbon which is thus received into the blood is evidently disengaged from the tissues during the process of nutrition, &c. This (the liberation of caloric) will in general be nearly uniform throughout the system; but there are many cases in which increased action is going on, either as a natural condition or as a diseased state; and a higher local temperature is thus produced. This would seem to be in some degree connected with the influence of the nervous system; but it may be regarded as probable that the evolution of caloric is not dependent upon nervous action in any other way than through those organic processes which stand in relation to both. The results obtained by various experimenters would appear to indicate, that some other organic processes, besides those connected with the excretion of carbon through the lungs, must contribute to the maintenance of the heat of warm-blooded animals" (*CARPENTER'S Principles, &c. Sec. 494.*)

In conclusion, the author will state a few parallel passages from DR. CARPENTER'S *Principles, &c.* and the Writings of the REV. DR. CHANNING, by which his circle of evidence will be complete. To avoid all unnecessary complexity, as well as to preserve an unity of illustration, the parallels will still be limited to the writings of the *Rev. Doctor*. The reader will have observed, at the close of the foregoing coincidences with Channing, the tact of the CRITIC in disguising his goods, without essentially impairing their lustre.

DR. CHANNING'S WORKS,

"The great use which I would make of the principles laid down in this discourse, is to derive from them just and clear views of the nature of religion." "Shall I deem a property in the outward Universe as the highest good, when I may become partaker of the very Mind from which it springs, of the disposing wisdom, through which its order, beauty, and beneficent influences subsist." "We regard nothing so important to a human being, as the knowledge of his own mind, and of its intimate connection with the Infinite Mind." "To bring the created mind into living union with the Infinite Mind, so that it shall respond to Him through its whole being, is the noblest function, which this harmonious and beneficent Universe performs." (*CHANNING'S Works, pp. 198, 468, 469, 492.*)

"In proportion as the TRUE and sublime CONCEPTION of God shall unfold itself in the soul, and shall become there a central sun, shedding its beams on all objects of thought, there will be a want, &c. It will be felt that the poet has seen nature only UNDER CLOUDS, if he have not seen it under this CELESTIAL LIGHT." (*Ibid. p. 208.*)

"In proportion as we approach and resemble the Mind of God, we are brought into harmony with the Creation; for, in that proportion we possess the

DR. CARPENTER'S PRINCIPLES.

"Every step which we take in the progress of generalization, increases our admiration of the beauty of the adaptation, and the harmony of the action, of the laws we discover; and it is in this beauty and harmony that the contemplative mind delights to recognise the wisdom and beneficence of the Divine Author of the Universe. This, in fact, is one of the highest results to which the exercise of our intellectual faculties should lead; and we cannot but believe that the Creator, in endowing us with these faculties, intended that they should conduct us nearer to the CONCEPTION of His Infinite Mind."

"When our knowledge is sufficiently advanced to comprehend these things, then shall we be led to a far higher and nobler CONCEPTION of the Divine Mind than we have at present the means of forming. But, even then, how infinitely short of the reality will be any view that our limited comprehension can attain, seeing, as we ever must in this life, 'as through a glass, darkly;' how much will remain to be revealed to us in that glorious future, when the LIGHT of TRUTH shall burst upon us in UNCLOUDED LUSTRE."

"In proportion to our attainment of the generalizations to which we are thus led, we acquire fresh proofs of the Omnipotence of Creative skill; for,

principles from which the Universe sprung; we carry within ourselves the perfections of which its beauty, magnificence, order, benevolent adaptations, and boundless purposes, are the results and manifestations.

It is possible, that the brevity of these hints may expose to the charge of mysticism, what seems to me the calmest and clearest truth. What man can examine the structure of a plant or an animal, and see the adaptation of its parts to each other and to common ends, and not feel, that it is the work of an Intelligence akin to his own, and that he traces these marks of design by the same spiritual energy in which they had their origin? "Nature in its lowest and inanimate forms, is pervaded by His Power; and when quickened by the mysterious property of life, how wonderfully does it show forth the perfections of its Author. How much of God may be seen in the structure of a single leaf, which though so frail as to tremble in the wind [and be *torn*,] yet holds connections and living communications with the earth, the air, the clouds, and the distant sun; and through these sympathies with the Universe, is itself a revelation of the Omnipotent Mind." (CHANNING'S *Works*, pp. 453, 466.)

"The discoveries of science have continually added strength to that great principle, that the phenomena of the Universe are regulated by general and permanent laws, or that the Author of the Universe exerts His Power according to an established order. Nature, the more it is explored, is found to be uniform. We observe an unbroken succession of causes and effects. Many phenomena once denominated irregular, and ascribed to supernatural agency, are found to be connected with preceding circumstances, as regularly as the most common events. The comet, we learn, observes the same attraction, as the sun and planets. That attention to the powers of nature, which is implied in scientific research, tends to weaken the practical conviction of a Higher Power; and the laws of the Creation, instead of being regarded as the *MODES* of Divine operation, come insensibly to be considered as fetters on his agency, as too sacred to be suspended even by their Author. When a new phenomenon now occurs, no one thinks it miraculous, but believes, that when better understood, it may be reduced to laws already known, or is an example of a law not yet investigated."

"To a man, whose belief in God is strong and practical, a miracle will appear as possible as any other effect; and the argument against miracles, drawn from the uniformity of nature, will weigh with him, only as far as this uniformity is a pledge and proof of the Creator's disposition to accomplish his purposes by a fixed order or mode of operation. The Creator's regard or attachment to such an order may be inferred from the steadiness with which he observes it; and a strong presumption lies against any violation of it on slight occasions, or for purposes to which the established laws of nature are adequate. God adheres to the order of the Universe because it is most suited to accomplish his purposes." "If, then, the great purposes of the Universe can best be accomplished by departing from its established laws, these laws will undoubtedly be suspended." (CHANNING'S *Works*, pp. 338, 339. Boston, 1830.)

at every successive step, are we able to comprehend new relations between facts that previously seemed confused and insulated, new objects for what at first seemed destitute of utility; and in the same proportion will the contemplative spirit be led to appreciate the vastness of that Designing Mind, which, in originally ordaining the laws of the animated world, could produce such harmony and adaptation amongst their innumerable results.

To avoid all chance of being misunderstood in these views, it may not be useless to adduce, in illustration of them, one of the most obvious and simple adaptations every where presented in the structure of animals,—that of the muscles to the skeleton. We constantly find, in pursuing our anatomical inquiries, that, for the advantageous attachment of muscles to bones, some particular form of the latter is provided;" &c. "But he (the physiologist) will obtain a much more elevated view of the nature of Creative Power, if he carry his inquiries farther." "Those (facts in physiology) which would seem to be of the most trifling consequence, if viewed in this light only, (physiologically), are often found, when properly applied, to possess an unexpected and momentous import. A broken twig, a *torn* leaf, a flattened blade of grass, are signs which an ordinary traveller would pass without observation; but, to the practised eye of the denizen of the woods, they are alike certain and expressive." (CARPENTER'S *Principles*, &c. Sec. 598—601.)

"The unchangeableness of His nature is manifested by his continued action in the material Creation, according to the same plan by which He at first adjusted the relations of its parts. Our belief in the uniformity of Nature, which leads us to seek for a common cause when a number of similar phenomena are presented to our observation, is based, not only upon experience, but upon the conviction which every believer in the existence of the Deity feels of his immutability. If it were otherwise, we should be led by *analogy* only to infer the existence of law and order where none is evident." "To imagine, therefore, that the plan of the Universe, once established with a definite end, could require alteration during the continuance of its existence, is at once to deny the perfection of the Divine attributes; &c. Let it be borne in mind, then, that when a law of Physics or Vitality is mentioned, nothing more is really implied than a simple expression of the *MODE* in which the Creator is constantly operating on inorganic matter, or on organized structures." "If these (miraculous interpositions) are exceptions to general laws, they are so only in human estimation; since they are as much a part of the Divine Will, and were as much foreseen by Divine Omniscience, as any of those occurrences which are usually regarded as constituting the order of Nature."

"To suppose that the adaptation of these laws to each other, and to those of the external world, could be otherwise than perfect would be to cast a stigma upon Infinite Wisdom." "Thus, the motions of the solar system all result from that universal property of matter, gravitation, which, originally balanced against other forces, will continue to produce the same effects as long as may be consistent with the designs of the Creator." (CARPENTER'S *Principles*, &c. Sec. 147, 148, 9. London, 1839.)

[Dr. Channing abounds with eloquent remarks to the foregoing effect, and they are common in the "*Principles*."]]

(1) See the contradictions (*Reply*, p. 10—11, 25, 28, 31—33, 36, 40, 46—48, 52, 62, &c.) to which this habit of dependence unavoidably leads; since such a writer can be guided by no "*Principles*," &c.